DEVOTED TO RESEARCH AND CLINICAL STUDY OF THE DISEASES AND PROCESSES OF THE AGED AND AGING

ST. JOHN ORERA
LIBRARY

Geriatrics

VOLUME 2 November-December 1947 NUMBER 6

Whole proteins are not only more palatable and more smoothly assimilated than protein hydrolysates, they are biologically more efficient.*
'DELCOS' Protein-Carbohydrate Granules provide highest quality whole proteins, *casein* and *lactalbumin*, protected by carbohydrate, 30%, and palatable, even in large, prolonged dosage.
Protein replacement usually requires 100-200 Gm. daily, for several weeks.
The best route is by mouth, for any patient who can swallow.
Infusion hazards are avoided; more complete nutrition is provided.*
'DELCOS' Granules are exceptionally palatable, mix easily with food, are not affected by cooking, and are 20% more effective biologically than beefsteak.
When oral protein is indicated, supplement a high nitrogen diet with 'DELCOS' Granules, the protein patients accept, dose after dose, day after day.

*J.A.M.A. 131:826, 1946

whole protein

100% palatable digestible efficient

SHARP & DOHME

'delcos'

protein-carbohydrate granules

Supplied in 1-lb. and 5-lb. wide-mouthed jars.

Sharp & Dohme, Philadelphia 1, Pa.

Official Journal of the American Geriatrics Society

EDITORIAL BOARD

A. E. HEDBACK, M.D., *Editor*

Associate Editors

EDWARD B. ALLEN, M.D., White Plains, New York
LORD AMULREE, M.D., M.R.C.P., London, England
FREMONT A. CHANDLER, M.D., Chicago, Illinois
WILLIAM J. DIECKMAN, M.D., Chicago, Illinois
HAVEN EMERSON, M.D., New York City
JONATHAN FORMAN, M.D., Columbus, Ohio
GEORGE R. HERRMANN, M.D., Galveston, Texas
TREVOR H. HOWELL, M.R.C.P. Ed., Purley, Surrey, England
WINGATE M. JOHNSON, M.D., Winston-Salem, North Carolina
NORMAN JOLLIFFE, M.D., New York City
FOSTER KENNEDY, M.D., New York City
WILLIAM J. KERR, M.D., San Francisco, California
F. L. PHILIP KOCH, M.D., New York City
GEORGE W. KOSMAK, M.D., New York City
CHAUNCEY D. LEAKE, Ph.D., Galveston, Texas
OSWALD SWINNEY LOWSLEY, M.D., New York City
J. A. MYERS, M.D., Minneapolis, Minnesota
HOWARD C. NAFFZIGER, M.D., San Francisco, California
GEORGE E. PFAHLER, M.D., Philadelphia, Pennsylvania
E. A. ROVENSTINE, M.D., New York City
EDWARD A. STRECKER, M.D., Philadelphia, Pennsylvania
EDWIN L. STURDEE, M.D., M.R.C.P., London, England
MALFORD W. THEWLIS, M.D., Wakefield, Rhode Island
WILLARD OWEN THOMPSON, M.D., Chicago, Illinois
E. L. TUOHY, M.D., Duluth, Minnesota
WALTER E. VEST, M.D., Huntington, West Virginia
MAURICE B. VISSCHER, M.D., Minneapolis, Minnesota
S. MARX WHITE, M.D., Minneapolis, Minnesota

PROMPT HEMOGLOBIN BUILD-UP
plus . . .
NUTRITIONAL SUPPORT

℞

Cytora 'Roche-Organon' is "a hematinic plus"—a complete medication specially formulated for the prevention and treatment of hypochromic anemia and frequently associated nutritional deficiencies. Each Cytora tablet contains a well-balanced combination of iron, folic acid, liver, vitamin C and five B-complex factors; thus Cytora provides in a single tablet important factors utilized in erythropoiesis plus other dietary essentials so frequently needed by patients with hypochromic anemia and by patients during pregnancy and post-operative convalescence. Cytora is available in bottles of 100, 250, and 1000 tablets. ROCHE-ORGANON INC., Roche Park, Nutley 10, N. J.

CYTORA 'ROCHE-ORGANON'

T.M.—Cytora—Reg. U.S. Pat. Off.

GERIATRICS

Official Journal of the American Geriatrics Society

VOL. II, NO. 6

CONTENTS

NOVEMBER-DECEMBER 1947

Endocrine Problems After the Age of Forty-Five . . . . . WILLARD O. THOMPSON, M.D. 325

The Chemotherapy of Urinary Tract Infections in the Elderly . . . . . WILLIAM L. HEWITT, M.D. 334

General Oxidative Processes with Relation to Degenerative Changes in the Body . . . . . WILLIAM B. KOUNTZ, M.D. and MARGARET CHIEFFI, M.D. 344

Care of the Aged and of the Chronic Sick in Great Britain . . . . . E. L. STURDEE, M.D., M.R.C.P. 359

Non-Profit Institutions Serving the Aged in Philadelphia . . . . . WALTER R. HARRISON 366

Editorial:
The Medical Care of Old People 370

Index to Volume II 373

Care of the Aged and Infirm (Report of the Meeting of the Social Medicine Section of the International Conference of Physicians, London, England) 380

GERIATRICS is published bimonthly at Minneapolis. Publication dates: January, March, May, July, September, November. Subscription rates: $5.00 a year, $1.00 a copy; foreign, $6.00 a year, $1.20 a copy. Louis M. Cohen, Publisher, Ruth E. Branger, Assistant Editor. Maurice Wolff, Business Manager; James H. Callan, Assistant Business Manager. Address all editorial and business correspondence to GERIATRICS, 84 South Tenth Street, Minneapolis 2, Minnesota.

ADVERTISING REPRESENTATIVES. NEW YORK 17: George Doyle, Lee Klemmer, Arthur Young, 1 East 42d Street, Suite 801, Corn Exchange Building. Telephone: Murray Hill 2-8717. CHICAGO 11: Jay H. Herz, Suite 1921, 20 North Wacker Drive. CHICAGO 6, ILL. Telephone: Central 4619. CLEVELAND 14: Bernard A. Smiler, 1125 Fidelity Building. Telephone: Main 3619. SAN FRANCISCO 4: Duncan A. Scott & Co., Mills Building. Telephone: Garfield 1-7950, LOS ANGELES 15: Duncan A. Scott & Co., 408 Pershing Square Building, 448 South Hill Street. Telephone: Michigan 6203.

Copyright 1947 by MODERN MEDICINE PUBLICATIONS.
Title Reg. U.S. Pat. Off. Entered as second-class matter February 14, 1946, at the post office at Minneapolis, Minnesota under the act of March 3, 1879

a cushioned injection

.... MERCUHYDRIN BY MUSCLE ....

"Blind tests" [1] confirm the experience of internists throughout the country [2,3,4] . . . Mercuhydrin Sodium Solution is significantly free from reaction at the site of injection.

The intramuscular route provides an absorption site from which the medication is released to the circulation *more slowly* than is the case following intravenous injection of a drug. In this way conduction centers of the heart are spared the shock of relatively massive and sudden drug concentrations.

By making the intramuscular route more generally available, the new mercurial diuretic, Mercuhydrin, has matched the pace of improving technics in the treatment of cardiac decompensation.

Mercuhydrin Sodium is the sodium salt of methoxyoximercuri-propylsuccinylurea-theophylline. Supplied in 1 cc. and 2 cc. ampuls. Literature and clinical sample on request. LAKESIDE LABORATORIES, INC., *Milwaukee 1, Wisconsin.*

1. Modell, W., Gold, H. and Clarke, D. A.: J. Pharm. and Exper. Therap., **84**:284-290 (July) 1945.
2. Finkelstein, M. B. and Smyth, C. J.: Proc. Central Soc. Clin. Research, **16**:69, 1943.
3. Friedgood, H. B.: New Eng. J. Med., **227**:788-798 (Nov. 19) 1942.
4. Finkelstein, M. B. and Smyth, C. J.: J. Lab. and Clin. Med., **31**:454, 1946.

Mercuhydrin Sodium

(BRAND OF MERALLURIDE SODIUM)

WELL TOLERATED LOCALLY

ENDOCRINE PROBLEMS AFTER THE AGE OF FORTY-FIVE

Willard O. Thompson, M.D.*

ENDOCRINE problems vary somewhat at different periods in life and the manifestations of endocrine diseases depend to some extent upon the age at which they develop. The object of this paper will be to give a brief resumé of the endocrine problems most commonly encountered after the age of forty-five.

THE PITUITARY

Most pituitary diseases begin before the age of forty-five but they may persist for many years after this age.

Acromegaly usually begins in the third or fourth decade of life and may remain active for long periods of time. The disease is self limited but cases are on record in which it has appeared to remain active for as long as fifty years. During the active period of the disease it may be complicated by the presence of hyperthyroidism and diabetes mellitus which are secondary, respectively, to over-production of the thyrotropic and diabetogenic factors by the anterior lobe of the pituitary.

When hyperthyroidism is present it can usually be controlled with antithyroid drugs, while diabetes has to be treated with insulin in the regular manner. After acromegaly has persisted for a period of several years, hypertrophic arthritis is very commonly a troublesome complication and causes pain, swelling and limitation of motion of various joints. Renal calculi may be a late complication and may sometimes present serious problems in management because of their tendency to recur. Headache is often a troublesome feature and narcotics should not be used to control it because of the danger of developing a narcotic habit. I recall a professor in one of our universities who became addicted to codein which had been administered for the control of headache complicating acromegaly. If the disease is still active after the age of forty-five an effort should be made to control it by directing X-ray therapy to the pituitary region. The control of acromegaly by X-ray therapy is not very satisfactory, although in a few patients it produces some improvement. The disease finally burns itself out regardless of the method of treatment used. Efforts to inhibit the pituitary by the administration of androgens and estrogens have not proved effective. Operative interference is indicated only when the enlargement of the pituitary is great enough to compress the optic chiasm, an uncommon occurrence in patients with acromegaly. The disease is usually caused by an eosinophilic adenoma of the

*Clinical Professor of Medicine, University of Illinois College of Medicine; Attending Physician, Henrotin and Grant Hospitals, Chicago.

READ at the Fourth Annual Meeting of the American Geriatrics Society, Atlantic City, New Jersey, June 7, 1947.

anterior lobe but is sometimes associated with hyperplasia of these cells without the formation of an adenoma. The sella turcica is enlarged in most instances but in a few patients with acromegaly it is normal in size. As the disease gradually burns itself out, the hyperpituitarism may be followed by hypopituitarism with all the secondary manifestations of this disorder, including hypothyroidism and hypogonadism.

Cushing's disease. A few years ago Cushing reported a syndrome characterized by obesity, hypertension, glycosuria, hypogonadism and the development of purplish striae and purpuric areas on the skin. It was his impression at first that this disorder was caused by a basophilic adenoma of the pituitary which was often microscopic in size. Further evidence indicated that most patients with Cushing's disease have a disturbance of the adrenal cortex usually associated with an adenoma of this organ and the disease probably does not develop without adrenal involvement. It usually develops during the third or fourth decade of life but may appear at any age. The treatment is very unsatisfactory. X-ray therapy over the pituitary, operative removal of a portion of the pituitary and removal of adenomas in the adrenals have been tried. In some instances some improvement has been noted but eventually most patients die of the disease.

Dystrophia Adiposogenitalis (Fröhlich's syndrome) usually begins in childhood or adolescence and when cases are encountered later in life they usually represent persistence of the disorder from the time of childhood. However, the disturbance may begin at any age and is characterized by a soft, delicate skin, excessive fat on the thighs and in the abdominal region with a characteristic transverse fold above the pubis over which the fat tends to hang down in an apron-like mass over the pubic area. The obesity is associated with hypogonadism and hypotrichosis. In males the shoulders are usually narrow, the breasts full, and hips and pelvis broad. Genu valgum is a striking feature. The hands are usually small with tapering fingers. There is commonly maxillary prognathism in contrast to the mandibular prognathism of acromegaly.

When dystrophia adiposogenitalis develops in later life it may or may not be associated with a chromophobe adenoma of the pituitary. It is usually associated with hypothyroidism which is not complete. The basal metabolism commonly varies from minus 20 to minus 30 per cent. The treatment of this disturbance in older people involves the following:

1. Correction of hypogonadism by the administration of androgens or estrogens, according to the sex of the individual.
2. Correction of hypothyroidism by the administration of desiccated thyroid.
3. Correction of the obesity by the administration of a suitable weight-reducing diet.

Chromophobe adenoma of the pituitary usually develops in the second or third decade but may develop at any age. Chromophobic cells are func-

tionless. As the tumor develops it encroaches on the normal pituitary structures and interferes with their function. Varying degrees of hypopituitarism therefore result. The tumor is sometimes large enough to compress the optic chiasm and a portion of the adenoma must then be removed surgically.

Since there is no pituitary extract at the present time of much value for routine clinical use, the treatment must be directed at the correction of the glandular deficiencies that are secondary to the hypopituitarism, notably the hypothyroidism and hypogonadism. When the hypopituitarism is marked, patients may occasionally suffer from hypoglycemic reaction requiring intravenous administration of glucose. Patients with hypopituitarism in severe form may also suffer from a secondary hypofunction of the adrenal cortex, producing many of the signs and symptoms of Addison's disease, including hypertension, weakness and lowering of the concentration of sodium in body fluids. Pigmentation is usually not encountered in such patients. Patients who have secondary hypofunction of the adrenal cortex must be treated as if they had Addison's disease. Addisonian crises are sometimes noted. Patients are sometimes encountered in later life in whom a chromophobe adenoma developed during childhood. When the adenoma develops in early life it produces dwarfism. In spite of the correction of various glandular deficiencies that are secondary to hypopituitarism, patients with chromophobe adenoma usually continue to be somewhat weak and pepless and there remains a portion of the disease which appears impossible to control with the therapeutic agents available at the present time. Chromophobe adenomas probably reduce longevity.

Simmonds's Disease is rare and usually begins before the age of forty-five and is likely to be fatal in a short period of time. Most of the cases which have been reported as Simmonds's disease are probably actually cases of anorexia nervosa. The disease is associated with complete loss of pituitary function with all the signs and symptoms of glandular deficiency that are secondary to hypopituitarism, including hypothyroidism, hypogonadism and hypoadrenalism. The appetite is poor and there is usually marked loss of weight. Patients usually become prematurely senile in appearance. The influence of the pituitary on sugar metabolism is lost and patients are liable to have hypoglycemic convulsions. Treatment consists in correcting the glandular abnormalities which are secondary to the hypopituitarism but even with these corrections, complete improvement does not occur.

Anorexia nervosa is not encountered after the age of forty-five. It is primarily a disorder of women in the second and third decades of life. Its manifestations are similar to those of Simmonds's disease except that the patients who have this disorder usually appear in much better condition than those with Simmonds's disease. The function of most of the glands of internal secretion is greatly impaired as a result of malnutrition.

Pituitary preparations. As pointed out previously, there is no pituitary extract at the present time that is of much value for routine clinical use. In

man various extracts have a transient effect or no effect at all. Evans has recently reported some observations on a new and more highly purified preparation of the growth factor and he has isolated an adrenocorticotropic factor which stimulates the adrenal cortex. The adrenocorticotropic factor has been tried in man and the results are contradictory. In two patients with hypopituitarism Thorn, et al., found that it stimulated all functions of the adrenal cortex. In normal men, other observers noted no effect on sodium metabolism. The development of satisfactory pituitary extracts will be awaited with great interest. At the present time, in patients with pituitary deficiencies it is necessary to treat the glandular deficiencies that are secondary to the pituitary deficiency instead of using pituitary extracts.

THE THYROID

Hyperthyroidism decreases rapidly in frequency after the age of forty-five. During this age period it remains more common in women than in men although the sex difference in frequency is not as great. The treatment of the disease is the same as earlier in life except that in older people who present poor operative risks, notably because of the presence of cardiac decompensation, the disease should be treated medically and not surgically. There have been several interesting developments in the treatment of toxic goiter in the last few years, namely, irradiation of the pituitary; use of anti-thyroid drugs; use of radioactive iodine.

The most plausible explanation of the production of hyperthyroidism is overproduction of the thyrotropic factor by the pituitary. This hypothesis is not definitely established but is supported by the following evidence:

1. The production of a syndrome resembling exophthalmic goiter in man and animals as a result of administration of the thyrotropic factor.
2. Increase in the severity of toxic goiter by the administration of the thyrotropic factor.
3. The production of hyperthyroidism in patients with non-toxic goiter by the administration of the thyrotropic factor.
4. The cure of toxic goiter in about one-third of the patients by X-ray treatment of the pituitary.

The cure of thyrotoxicosis by irradiation of the pituitary is of great scientific interest but is not yet of practical clinical importance because of the relatively small percentage of permanent cures (about one-third of the cases).

With thiouracil and propylthiouracil it is possible to produce a permanent remission in fifty per cent or more of patients with hyperthyroidism, the percentage of cures apparently being higher in patients with exophthalmic goiter than in those with toxic adenoma. Drug therapy is being used in two ways in the treatment of toxic goiter: To treat the disease medically; to prepare patients for operation. There is some difference of opinion as to

whether it should be used to treat the disease medically in patients who can be satisfactorily prepared for operation. When used for preoperative preparation these drugs control the thyrotoxicosis completely and greatly reduce the risk of operation. It is generally agreed that they should be used for medical treatment in patients who have persistence or recurrence of exophthalmic goiter following subtotal thyroidectomy and in patients who cannot be prepared for operation by any method. Many observers feel that in patients with nodular goiter and hyperthyroidism the disease should not be treated medically unless the patients cannot be suitably prepared for operation.

The use of radioactive iodine represents an interesting development in the treatment of toxic goiter. The percentage of permanent cures has not been determined and very little information is available at the present time concerning the possibility of later complications, such as the development of carcinoma. So far the results appear promising.

Carcinoma of the thyroid is a relatively rare disease and usually develops in an adenomatous goiter. It is most common after the age of forty-five but may begin at any age. Some work has recently been done suggesting that the incidence of carcinoma in patients with adenomatous goiter is relatively high. The incidence in such patients has been reported to be as much as 25 per cent. These figures do not coincide with the clinical observation of the relative infrequency of carcinoma of the thyroid. There is some difference of opinion concerning the diagnostic criteria. It has been argued for years that all nodules of the thyroid should be removed in order to prevent the development of carcinoma. Routine removal of all nodules of the thyroid, except in the hands of the most skilled surgeons, would probably result in a mortality as high as that from untreated carcinoma. When subtotal thyroidectomy is done for adenomatous goiter, nodules commonly develop in the remnant of thyroid tissue left at operation. The routine removal of nodules after the age of forty-five is probably justified although it has not been definitely established that this procedure reduces the incidence of carcinoma.

THE PARATHYROIDS

Hyperparathyroidism may develop at any age but is more common before than after forty-five. When the disease is fully developed, with osteoporosis, giant cell tumor, and renal calculi, the diagnosis is easy. It is probably wise to do a serum calcium determination routinely in all patients with nodules in the neck and in all patients with renal calculi. Treatment of the disease consists in subtotal removal of the parathyroid tissue. Parathyroid tetany usually develops in the postoperative period and may be either transient or permanent. It is very important that adequate therapy be given immediately when the condition develops after operation.

The idiopathic type of parathyroid tetany is rarely encountered after the age of forty-five but parathyroid tetany as a result of operative removal

of the parathyroid occurs about as frequently following thyroidectomy after forty-five as before. It is of the greatest importance to detect the parathyroid tetany as soon as it develops and treat it adequately. When patients are adequately treated, serious complications such as cataracts do not develop and the longevity of the patient is not affected. The condition can be very satisfactorily treated by the oral administration of calcium salts supplemented with dihydrotachysterol or large doses of vitamin D.

THE ADRENALS

Most adrenal disorders develop before the age of forty-five. The only condition which will be considered in this paper is Addison's disease although it usually begins between the second and fourth decade. It is now possible to maintain life in patients with this condition for long periods of time and the condition may be encountered in later life. Patients with this disease do not have much resistance to trauma and infection and are apt to be seen in a crisis. The condition of the patients rapidly deteriorates and treatment must be started at once. It consists of the following:

1. Intravenous administration of 5 per cent dextrose in Hartmann's solution at the rate of 1 liter in 8 hours.
2. The intravenous administration of adrenal cortex extract in doses of 5 to 40 cc. per hour.

As nausea subsides, the oral administration of fluid is substituted for the intravenous and the dose of extract is gradually reduced. When the patient has recovered completely, a maintenance program should be instituted which may consist of any one of the following:

1. Subcutaneous implantation of pellets of desoxycorticosterone.
2. Subcutaneous administration of large doses of adrenal cortex extract—from 10 to 40 cc. per day.
3. Smaller doses of desoxycorticosterone or extract supplemented by sodium salts.

The best method of treatment is adequate substitution therapy. When adequate quantities of hormone are administered, supplementary administration of sodium salts is unnecessary. Patients may take salt according to their taste. The most practical method of treatment is the subcutaneous implantation of the synthetic material, desoxycorticosterone. This eliminates the need for daily injections of hormone. One implantation lasts between four and ten months. It is common practice to begin with the administration of 300 mg. If this is not adequate, it is supplemented by additions of 150 mg. until the correct amount has been administered. As a rule, the total initial amount does not need to exceed 600 mg. This material affects sodium and potassium metabolism but does not affect carbohydrate metabolism. Patients therefore sometimes feel better if this type of treatment is supplemented with the administration of adrenal cortex extract. Some patients with Addison's disease do not tolerate the synthetic material well. When given in excess it

may produce hypertension, abnormal retention of salt and water with production of edema and focal necroses in the cardiac and skeletal muscles. Some patients have died as a result of its administration.

THE SEX GLANDS

The treatment of the climacteric presents a common problem after the age of forty-five in the female and is not an uncommon problem in the male.

The Menopause. About forty per cent of women experience very few symptoms at the time of the menopause and require no treatment. In the remaining sixty per cent, symptoms of varying degree develop and treatment is indicated. Symptoms consist of hot flashes, nervousness, palpitation, irritability and, in some instances, psychoses, usually characterized by depression and fear. Symptoms vary in duration from a few months to many years. The treatment of this condition is very satisfactory and may be carried out by a variety of synthetic and natural estrogens. The cheapest material is stilbestrol which is usually effective by mouth in a dose of 0.25 to 0.5 mg. daily. In some patients a larger dose is required but rarely more than 1.5 mg. daily. The best, and perhaps the most effective treatment is some suitable form of estradiol which is most effective when given intramuscularly. The effective dose varies from 1 2/3 mg. every two weeks to 5 mg. twice a week. It is usually given in the form of the benzoate or the dipropionate. With adequate therapy all of the symptoms of the menopause disappear and patients become more alert mentally and physically. One of the complications of estrogen therapy is the development of uterine bleeding. Women with an intact uterus may be made to bleed with estrogens at any time throughout life. Uterine bleeding serves no useful purpose after the menopause and an effort is made to avoid it. It is desirable to give a dose of estrogenic material that will control symptoms without inducing uterine bleeding but it is not always possible to achieve this ideal. The development of uterine bleeding from estrogen may present a serious problem in women with fibroids. In such women, excessive bleeding may develop requiring hysterectomy. All women in whom estrogenic therapy is contemplated should receive a careful gynecologic examination. If fibroids are present it is probably unwise to use estrogenic therapy. Such treatment is also contraindicated in women in whom the presence of carcinoma of the uterus is suspected. Bleeding as a result of estrogenic therapy sometimes gives rise to an incorrect diagnosis of carcinoma. A careful history should be taken of any woman who develops bleeding from the uterus after the menopause, to determine whether or not estrogenic therapy has been administered. If estrogenic therapy has been employed it is probable that this treatment is responsible for the abnormal bleeding.

Male Climacteric. There is some diminution in the production of androgen as men grow older and in some instances the reduction is great enough to produce definite symptoms. However, the climacteric does not represent a definite epoch in the male as in the female and is much less com-

mon. When it does develop the symptoms are similar to those observed in the female, including hot flashes. When the climacteric occurs, the administration of testosterone propionate in a dose of 25 mg. three times a week by intramuscular injection produces a complete cure and increases the mental and physical vigor of the individual. This form of treatment is contraindicated in any man in whom the diagnosis of carcinoma of the prostate is suspected.

Eunuchism and Eunuchoidism usually develop early in life although the testes may be lost at any age. These conditions are permanent and require treatment throughout life. Androgenic therapy is usually employed and testosterone propionate in a dose of 25 mg. three times a week by intramuscular injection is usually adequate. In some instances larger doses are necessary.

THE PANCREAS

Diabetes Mellitus may develop at any age and the later the age at which it develops the less severe it is likely to be. In some older individuals it appears to develop as a result of arteriosclerosis in the Islands of Langerhans. Treatment of diabetes mellitus is the same in older people as in younger people and the same problems are encountered.

Hyperinsulinism with hypoglycemic reactions associated with tumor or hyperplasia of the Islands of Langerhans may be encountered at any age but is more common before the age of forty-five. The symptoms are those associated with hypoglycemia and the treatment consists of removing either the tumor or an adequate portion of the pancreas, if hyperplasia is present.

RELATION OF HORMONES TO CANCER

In the last few years interesting observations have been made on the relation of hormones to carcinoma of the prostate and carcinoma of the breast.

Carcinoma of the Prostate. A few years ago Huggins noted that castration often produced striking improvement in men with carcinoma of the prostate. The prostate decreased in size. The X-ray evidence of metastases in bone often diminished or disappeared entirely and the pain which was often a very troublesome symptom disappeared. As time went on, many patients died of carcinoma of the prostate following initial improvement but of the 20 patients originally reported by Huggins, all of whom had advanced carcinoma, 4 are still living more than six years after castration. Functional castration by the use of stilbestrol is also used but it is the belief of Huggins that surgical castration works better than functional castration. A large number of observations have now been carried out in many clinics. There seems to be little doubt that striking symptomatic improvement follows castration in patients with cancer of the prostate. In the opinion of most investigators there is little doubt that this form of treatment prolongs life. It has not yet been determined whether or not it ever produces a permanent cure.

If androgen is responsible for the development of carcinoma of the prostate, it is not clear why, in some patients, castration produces prolonged improvement and in others carcinoma continues to develop after initial improvement. It is Huggins' impression that while androgenic stimulation may be necessary for the development of carcinoma, the carcinoma cells may eventually acquire the ability to proliferate without androgens. These observations on carcinoma of the prostate are of the greatest interest and represent the first clearcut example of the role of hormones in the development of carcinoma in man.

Carcinoma of the Breast. It has been known for a long time that in women with carcinoma of the breast, removal of the ovaries sometimes produced improvement. Observations have recently been made, notably in the Memorial Hospital in New York, which indicate that a functional castration of women with testosterone propionate sometimes produces improvement. Some reduction in the size of the lesion in the breast has been noted with this form of therapy but most significant are the changes in the bony metastases which may sometimes almost disappear with androgenic therapy. Great symptomatic improvement may also be produced with relief of pain and gain in weight. It has been reported by some investigators that, in women after the menopause, estrogenic therapy may be of value in soft tissue metastases; whereas before the menopause an excess of estrogen may be responsible for the development of carcinoma. No adequate explanation has been given for this contradictory state of affairs.

It should be pointed out that enough data have not yet been collected to substantiate these impressions. The improvement, as a result of androgenic therapy or castration, in women with carcinoma of the breast is by no means as consistent or striking as the improvement following castration in men with carcinoma of the prostate. Most women who have shown some initial improvement have later died from carcinoma of the breast. The clinical course of patients with breast cancer is variable and spontaneous remissions in the disease without treatment have been reported. Conclusions regarding the efficacy of any form of treatment must therefore be made cautiously. The hypothesis has recently been set forth in a popular magazine that estrogenic therapy is harmful in women after the menopause because of the danger of development of cancer of the breast. It should be emphasized that the development of cancer of the breast is rarely observed in women receiving estrogenic therapy for the menopause, in spite of the fact that this form of treatment has been carried out on a large scale. The statement may therefore be made as a result of actual experience that there is no danger of inducing carcinoma of the breast by giving estrogenic therapy for the menopause. Further observations on the relation of hormones to carcinoma of the breast and prostate are very desirable. A large number of observations will have to be made in many clinics over a period of many years before the full story is told.

THE CHEMOTHERAPY OF URINARY TRACT INFECTIONS IN THE ELDERLY

William L. Hewitt, M.D.

THE greater frequency of urinary tract infections in the elderly as compared with the younger age groups is well known. The increased incidence of diabetes mellitus, obstructive uropathy, foreign bodies in the urinary tract such as calculi, and decreased renal function, as well as the role of pyelonephritis in initiating and continuing a pathological process resulting in renal insufficiency and cardiorenal vascular disease, accentuate the importance of prompt attention and proper management of this type of infection. The purpose of this paper is to present briefly the factors influencing the results obtained with the chemotherapeutic agents available and the indications and methods of usage of these agents. No attempt is made to discuss the indications for other important therapeutic measures such as the local use of mild antiseptic agents, the necessity for constant bladder drainage in the presence of urinary tract obstruction, and the great importance of proper urological intervention in the presence of conditions which preclude success with medical measures alone.

FACTORS INFLUENCING RESULTS

The choice of chemotherapeutic agent will be largely determined by the type of bacteria present in the urine. The relative frequency with which various types of bacteria occur in urinary tract infections is shown in Table 1.[1, 2] Gram-negative bacilli occur most commonly as etiological agents but gram-positive cocci may also be present in pure culture or as a mixed

TABLE 1

FREQUENCY OF OCCURRENCE OF BACTERIA IN URINARY TRACT INFECTIONS

ORGANISM	BRAASCH[1]	DE BAKEY PULASKI[2]
Total cases	200	680
E. coli	84	132
A. aerogenes	26	170
Staphylococci	28	58
Str. fecalis	8	83
Proteus sp.	6	115
Ps. aeruginosa	..	70
B. mucosus	..	32
Mixed infections	17	..

FROM the Robert Dawson Evans Memorial, Massachusetts Memorial Hospitals, and the Department of Medicine, Boston University School of Medicine.

infection with several types of bacteria. Mixed infections probably occur more frequently than is evident from superficial examination since bacteria different from those originally present frequently appear during or after treatment with chemotherapeutic agents and the original examination probably sufficed only to demonstrate the predominant bacterial species responsible for the infection at the time the urine was cultured. The type of bacteria present may also suggest investigation for certain types of pathological changes which interfere with chemotherapy and are amenable to surgery. The presence of *Proteus sp.* is frequently associated with urinary tract calculi and encrusted cystitis. Some strains of *Ps. aeruginosa, Staph. aureus* and *albus,* and *Alcaligenes fecalis* also possess the ability to split urea with production of ammonia which results in a strongly alkaline urine conducive to stone formation. The observation has been made that more extensive urinary tract pathology often accompanies infection with *Ps. aeruginosa* and *A. aerogenes* although the evidence for this is not entirely clear.[1]

Accurate knowledge of the type of pathologic process existing in the urinary tract is paramount for obtaining the best results with chemotherapeutic agents. The presence of a free flow of urine with no obstruction and minimum residual urine is of the utmost importance, particularly in the elderly in whom almost all types of obstructive uropathy occur more frequently. The presence of foreign bodies such as urinary calculi, indwelling catheters, suprapubic cystostomy or nephrostomy tubes behave in the same manner as foreign bodies elsewhere by providing an easy route for reinfection and preventing sterilization of any focus of infection. Even temporary urinary sterilization is difficult under these circumstances and permanent disappearance of bacilluria is extremely rare.[2, 3] Undrained localized accumulations of exudate represent foci which are inaccessible to chemotherapeutic agents and prevent exposure of bacteria to a concentration of the chemotherapeutic agent sufficient to insure bactericidal action. Wounds with granulating surfaces or fistulas communicating with the urinary tract offer such favorable conditions for bacterial growth that urinary sterilization cannot be accomplished in the presence of such circumstances. The difficulty in management of the latter group of infections is illustrated by the persistence of infection for prolonged periods following transurethral resection with symptoms which may be as troublesome as those preceding operation and may eventually be followed by fibrosis and bladder neck contracture. Eradication of this type of infection frequently requires several months of careful attention and changing of the chemotherapeutic agent employed.[4]

The functional status of the urinary system is also of importance. Antibacterial action depends both upon the concentration of the drug existing in the tissue fluids and in the urine. The relative importance of each of these concentrations is undetermined. Both concentrations depend upon dosage, renal function and urine volume. Since all of the compounds employed in the treatment of urinary tract infections are excreted in the urine, accumula-

tion in the blood may occur if marked impairment of renal function exists. This retention may result in the appearance of toxic manifestations. Diminution in renal efficiency has been noted in elderly patients with no other evidence of renal disease. Lewis and Alving[5] showed decreased urea clearance in the age groups over 40 and Shock,[6] using the renal clearance technique in persons between 60 and 80 years of age, adduced evidence of reduced glomerular and tubular function, especially the latter. The urinary concentration of a drug will be influenced by the urine volume which will depend largely on the fluid intake. Diuresis dilutes the concentration of chemotherapeutic agents in the urine and usually some attempt at regulation of the fluid intake is important for insuring an adequate urinary concentration to produce bactericidal action in the urine with simultaneous attention to requirements for adequate fluid balance. In our experience, a daily fluid intake of 2500 cc. will usually accomplish both of these purposes except when mandelic acid is the drug being employed or in the presence of acute constitutional symptoms and signs, when an increased fluid intake may be desirable. The *p*H of the urine is also of importance in some instances and the status of renal function may govern the success with which the urine can be made strongly acid by administration of ammonium chloride or alkaline by administration of sodium bicarbonate, sodium or potassium citrate.

Other factors of importance in the chemotherapy of urinary tract infections are the mode of administration and dosage of the particular agent utilized as well as the ability of the patient to tolerate the drug without evidence of toxic reactions. These factors will be considered specifically for each of the agents to be discussed. For most purposes, four chemotherapeutic agents are now widely employed, namely, mandelic acid, sulfonamides, penicillin and streptomycin.

Mandelic Acid

This substance proved to be the first successful step toward chemical sterilization of the urine but has been largely supplanted by sulfonamides, penicillin, and streptomycin. It has been reported to be effective against *E. coli* and other gram-negative bacilli, *Str. fecalis* and occasionally *Staph. albus* but other authors have observed only a minimal decrement in the number of bacteria when infections due to *E. coli* were treated and have had similar experience with infections due to staphylococci, alpha and beta-hemolytic streptococci or *A. aerogenes*.[7, 8] Inasmuch as these bacteria are better controlled by other agents available, the use of mandelic acid has been limited almost entirely to infections with *Str. fecalis* against which mandelic acid frequently is the agent of choice.[9] In addition, occasional strains of *E. coli* may be resistant to sulfonamides but may respond to mandelic acid.[10] In order to insure antibacterial action, the urinary concentration of mandelic acid must be 0.5 per cent or greater and the urine *p*H must be 5.5 or less. These requirements necessitate limitation of the daily fluid intake to 1,200-

1,500 cc. per day and administration of an acidifying agent with omission of alkalis and fruit juices. This procedure is contra-indicated in the presence of acute pyelonephritis, decreased renal function, or high fever which further limits the usefulness of this agent and, in general, this drug is not well tolerated by patients in the older age group.

Two dosage forms are available. Elixir of ammonium mandelate may be employed, giving 8 cc. four times a day after meals and at bed time, and if this preparation is used, the urine may be sufficiently acid without adding other acidifying agents. Tablets of calcium mandelate are also available which may be used in a dosage of 3.0 gm. four times a day but which require the addition of 1.0 gm. of ammonium chloride four times a day to produce acidification of the urine. Nausea and vomiting may follow use of these medications and hematuria occurs in about 2 per cent of patients receiving this chemotherapeutic agent.[11] Albuminuria and casts may also appear during treatment. If such urinary abnormalities appear, the drug should be immediately discontinued and in the presence of decreased renal function great caution should be exercised in employing mandelic acid. The period of administration of mandelic acid should be limited to eight to ten days, after which another agent should be substituted if recovery has not occurred. The possibility of stone formation following prolonged acidification therapy due to mobilization of calcium and phosphates should be remembered, as well as the fact that about 15-20 per cent of the bacteria isolated from urinary tract infections are capable of splitting urea with formation of ammonia.[12] Administration of ammonium salts in the presence of urea splitters in the urine will increase the production of ammonia and also be conducive to precipitation of salts important in stone formation.

Sulfonamides

All of the commonly occurring gram-negative bacilli (*E. coli, A. aerogenes, Proteus sp.* and *Ps. aeruginosa*), staphylococci, and occasionally *Str. fecalis,* respond to therapy with sulfathiazole or sulfadiazine which have supplanted the earlier sulfonamide drugs. A concentration of 10 mg. per cent in the urine produces a marked bactericidal effect and further increasing the concentration does not markedly enhance the therapeutic effect, with occasional exceptions when *Proteus sp.* or *Str. fecalis* are present.[10] Since the concentration of sulfonamide in the urine is considerably greater than that in the blood due to the renal tubular reabsorption of water, small doses of sulfonamides produce results as good as do larger doses with considerable diminution of the risk of toxicity.

Oral administration may be employed in most cases, although in patients in whom nausea and vomiting are prominent features of their illness, sodium salts of sulfathiazole, sulfadiazine, and sulfamerazine are available for intravenous administration. Infections characterized by mild symptoms and those with minimal systemic manifestations often respond well to 0.25 to

0.5 gm. three times a day and 1.0 gm. three or four times a day will prove adequate in almost all cases. If *Proteus sp.* or *Str. fecalis* are present, 1.0 gm. three or four times a day should be employed. Patients manifesting acute constitutional symptoms and signs with or without bacteremia should receive 1.0 gm. every four hours. In general, some caution should be used in administering sulfonamides to elderly patients inasmuch as impairment of renal function may permit retention of these compounds and lead to dangerous concentrations in the blood. An adequate fluid intake and urinary output (1,500 cc. per day) should be assured before initiation of sulfonamide treatment. Little advantage is gained by alkalinizing the urine. The results obtained with sulfonamides will be improved in the presence of *Str. fecalis* if the urine *p*H is acid, preferably about *p*H 5.0, at which a sulfonamide concentration of 25-50 mg. per cent is bactericidal for this organism as compared with *p*H 7.5 where a concentration of 200 mg. per cent is required.[13]

General familiarity with the toxic reactions to sulfonamides precludes a discussion of these features. All toxic reactions are relatively infrequent with sulfadiazine. Nausea and vomiting, drug rash, drug fever, and mental aberrations have occurred in the experience of most clinicians. Nausea and vomiting occur significantly less frequently when sulfadiazine is used than when sulfathiazole is employed. This is of importance in the elderly when maintenance of proper nutrition is important and often difficult. Hemolytic anemia and agranulocytosis are rare complications with the use of the newer sulfonamides. Crystalluria following the administration of sulfathiazole and sulfadiazine is quite common and microscopic hematuria may accompany this phenomenon in a substantial number of instances. Gross hematuria, oliguria, or nitrogen retention may occur, and indicate discontinuance of the drug. The incidence of renal complications of sulfonamides is low with the dosages necessary for treatment of urinary tract infections provided the urinary output is adequate. The demonstration that the solubility in the urine of one sulfonamide is independent of the presence of other sulfonamides provides a means by the use of sulfonamide mixtures for prevention of precipitation in the urine and thus should reduce the frequency of renal complications.[14, 15]

The antibacterial effect of sulfonamide mixtures corresponds to the additive effect of the concentration of each component of the mixture. The combination of sulfadiazine and sulfathiazole or sulfadiazine and sulfamerazine thus represents a mixture of high antibacterial potency but low renal toxicity. The combination of sulfadiazine and sulfamerazine is probably better on theoretical grounds since sensitivity to one of these drugs is almost always accompanied by sensitivity to the other, whereas sensitivity to sulfathiazole coexists with sensitivity to sulfadiazine and sulfamerazine in only 15 per cent of cases. Thus, if sensitivity to sulfadiazine develops, sulfathiazole could be employed in 85 per cent of cases, whereas if sulfadiazine and sulfathiazole were employed simultaneously, sensitization would prob-

ably develop to both drugs and then none of the three drugs could be given safely.[16]

The advent of the sulfonamides largely supplanted mandelic acid because of their wider field of usefulness against all bacteria responsible for urinary tract infections, the ease of administration and of procuring an adequate urinary concentration, the lack of necessity for control of urinary *p*H, and the usefulness in patients with acute pyelonephritis with marked constitutional symptoms and signs, and in patients with decreased renal function where limitation of fluids is dangerous. Penicillin, however, is usually the treatment of choice for urinary tract infections due to gram-positive cocci, and streptomycin has assumed importance in treatment of urinary tract infections due to gram-negative bacilli. Sulfonamides still retain an important place, however, in the treatment of chronic urinary tract infections on an out-patient basis, in prevention of infection following catheterizations of urological diagnostic procedures, in the postoperative management of patients submitted to transurethral prostatic resection as well as other urological surgery, and in patients in whom other chemotherapeutic agents have failed to produce a cure or have been followed by evidence of toxicity.

Penicillin

Penicillin is the most potent chemotherapeutic agent available for the treatment of infections due to staphylococci and streptococci. Staphylococci are important etiological agents in approximately 15 per cent, and streptococci in about 3 to 4 per cent of urinary tract infections.[1, 2] Gram-positive cocci are present either as single types of bacteria or associated with gram-negative bacilli in about 20 per cent of the cases of urinary tract infections.[4] The rapid excretion of penicillin in the urine in high concentrations makes this an extremely valuable therapeutic agent for the gram-positive cocci. The most notable exception to this is the group of enterococci which are quite resistant in vitro to the action of penicillin. Determination of the penicillin sensitivity of about twenty-five strains of these bacteria isolated from the urinary tract has revealed that, in general, a concentration of penicillin of 2.5 to 5.0 units per cc. is required to inhibit the growth of these bacteria. The frequent association of gram-positive cocci with gram-negative bacilli introduces the possibility of destruction of penicillin in the urine by a penicillinase produced by some of the gram-negative bacilli. That this does not usually occur to an extent of therapeutic importance is shown by the frequent eradication from the urine of gram-positive cocci with persistence of gram-negative bacilli following treatment with penicillin. However, in the presence of mixed infections, combined therapy with penicillin and another agent affecting gram-negative bacteria, such as sulfonamides or streptomycin, will frequently produce better end results as well as consume less time in sterilization of the urine.

An outstanding feature of infections with gram-positive cocci is the

occurrence of metastatic suppurative complications which may appear as a perinephric abscess or carbuncle of the kidney. Penicillin is quite effective in the treatment of the bacteremia which precedes these complications and is of great value in the management of the localized suppurative phenomena as well. Numerous examples have been reported in which the need for surgical drainage has been obviated by the early administration of this agent. Once the suppurative process is well established, however, clinical cure will proceed more rapidly if drainage is instituted in addition to judicious chemotherapy.

The adequacy of renal function influences the efficiency with which penicillin is excreted into the urine, although unless marked reduction of renal function exists, effective concentrations of penicillin appear in the urine. Dosage schedules employing 40,000-100,000 units of penicillin intramuscularly per day will usually insure a urine concentration of 20-60 units per cc. of urine. The in vitro studies of penicillin sensitivity of the gram-positive cocci suggest that the dosage should be somewhat higher when staphylococci are present than when streptococci are the etiological agents. Employment of an intramuscular dosage of 160,000-240,000 units per day should result in disappearance of gram-positive cocci from the urine in about 75 per cent of cases.[17] Treatment should be continued for one to two weeks.

STREPTOMYCIN

Most of the gram-negative bacilli encountered in urinary tract infections are susceptible in vitro to the concentration of streptomycin readily obtainable in the urine with the exception of *Ps. aeruginosa* and, frequently, cultures of this organism are moderately or highly resistant to streptomycin. This is also true of *Str. fecalis.* The decreased antibacterial effect of streptomycin in vitro when the *p*H of the culture medium is slightly acid is well known and a markedly increased bactericidal action is evident when the *p*H of the medium is over 7.0.[18] A similar phenomenon is observed in vivo, in that urinary sterilization occurs with much greater frequency when the urine reaction is alkaline.[3] The rapidity with which streptomycin resistance develops to a high order of magnitude has been repeatedly demonstrated in laboratory and clinical material. Bacteria recovered routinely from patients with urinary tract infections in which bacteriological cure has not been obtained with streptomycin frequently grow readily in the presence of 25,000-50,000 mcgm. per cc. Cultures which are resistant to streptomycin, however, manifest the same degree of sensitivity to penicillin and sulfonamides as they did before exposure to streptomycin.

Streptomycin administered intramuscularly produces maximum blood levels in two to three hours after injection and appears rapidly in the urine during the first hour after injection. Excretion continues at a considerably slower rate than penicillin with 20-30 per cent of a single dose being excreted later than four hours after injection as contrasted to almost complete excre-

tion of penicillin within four hours of administration.[19, 20] In those cases in which it is feasible to limit the daily fluid intake to 2500 cc. and with a daily dose of 1.0 Gm. of streptomycin, a minimum urine level of 100 mcgm. per cc. has been present almost uniformly. Two Grams of streptomycin daily usually has insured a urine level of 250 mcgm. per cc. Occasional instances may be observed of patients with advanced renal disease who manifest decreased renal excretion of streptomycin with urine levels which may be inadequate to produce bactericidal action.[20, 21]

The daily dosage of streptomycin usually varies from 1.0 to 4.0 Gm. which must be given intramuscularly. No correlation has been observed between the amount of the daily dose and urinary sterilization. One Gram of streptomycin daily will usually insure a urinary concentration of the drug sufficient to eradicate all gram-negative bacteria except *Ps. aeruginosa,* and in the presence of this organism or *Str. fecalis,* 2.0 Gm. per day should be employed. When bacteremia is also present a daily dose of 2.0 to 3.0 Gm. should be given. Because of the slower rate of excretion of streptomycin, injection at six hour intervals may be employed. Strikingly improved results as measured by the frequency of urinary sterilization are obtained by concomitant administration of alkali and streptomycin. Sodium bicarbonate, sodium or potassium citrate in doses of 2.0 Gm. every four hours will usually maintain the urine alkaline. In one series treated without alkali, urinary sterilization occurred in 20 per cent whereas disappearance of bacilluria occurred in 73 per cent of those patients given concomitant alkali.[3] The use of alkali is frequently limited in the elderly, however, by the presence of cardiac failure or renal insufficiency. In the dosage employed and the comparatively short duration of treatment usually practised (7-10 days), the toxic reactions reported in connection with streptomycin therapy occur with great infrequency.

Almost all cases of acute urinary tract infections with marked constitutional symptoms and signs manifest dramatic clinical improvement, although urinary sterilization may be obtained only infrequently. Bacilluria is decreased temporarily, however, in almost all patients treated with streptomycin even if the urine does not become sterile. Control of bacteremia which frequently accompanies acute pyelonephritis may be of importance in producing a good clinical response, and this improvement may be of great value in preparation of a patient for surgery. Pyuria responds more slowly and irregularly than bacilluria, as do, also, mild urinary tract symptoms and low grade fever in contrast to the dramatic response of severe constitutional symptoms and signs when present. The development by bacteria of high resistance is the immediate major factor in therapeutic failure and has been the most discouraging feature of streptomycin therapy. This phenomenon occurs rapidly, and persistence of bacteria after forty-eight to seventy-two hours of treatment usually signifies the presence of resistant bacteria which may render further treatment of no value unless continuing clinical improve-

ment justifies prolongation of therapy. Bacteremia with bacteria resistant to streptomycin may arise from a focus in the urinary tract, and it becomes obvious that unwise choice of the opportunity for streptomycin therapy may permit the development of resistant bacteria and thus preclude its successful use at a time when circumstances are more favorable for cure. Such resistant bacteria may persist in the urinary tract for at least six months after termination of chemotherapy with streptomycin, so that a second course of streptomycin therapy is usually no more successful than the first unless a considerable period of time has intervened.[3]

SUMMARY

1. Necessary prerequisites for successful chemotherapy of urinary tract infections are the presence of a free flow of urine without obstruction, drainage of localized accumulations of exudate, absence of foreign bodies within the urinary tract or wounds with granulating surfaces communicating with the urinary tract, and renal function sufficient to secrete the chemotherapeutic agent in bactericidal concentrations in the urine.

2. Mandelic acid has been largely supplanted by newer, more potent drugs, and this agent is now chiefly useful for the treatment of infections with *Str. fecalis* and occasional infections with *E. coli* which are resistant to sulfonamides and streptomycin.

3. Sulfathiazole and sulfadiazine are effective against almost all of the common bacterial pathogens isolated from the urinary tract. Large doses are unnecessary except in the presence of *Str. fecalis* or *Proteus sp.* or when bacteremia coexists with infection of the urinary tract. The use of sulfonamide mixtures is a possible method for reduction of renal complications.

4. Penicillin is the most potent agent for the eradication of gram-positive cocci in the urinary tract, as well as for the treatment of metastatic suppurative complications arising in the urinary tract during infections with these bacteria. In the presence of mixed infection with gram-negative bacilli, combined treatment with sulfonamides or streptomycin is indicated to provide adequate chemotherapy.

5. Streptomycin is effective against most of the gram-negative bacilli encountered in urinary tract infections. Moderately or highly resistant cultures of *Ps. aeruginosa* and *Str. fecalis* are frequently isolated and the presence of these bacteria is an indication for increased dosage. Alkalinization of the urine is an important adjunct to streptomycin therapy.

BIBLIOGRAPHY

1. Braasch, W. F.: Clinical Data Concerning Pyelonephritis. J. Urol. *39*: 1, 1938.
2. DeBakey, M. E., and Pulaski, E. J.: An Analysis of the Experience with Streptomycin Therapy in United States Army Hospitals. Surgery *20*: 749, 1946.
3. Hewitt, W. L.: Treatment of Urinary Tract Infections with Streptomycin. Am. J. Med. *2*: 474, 1947.
4. Maclean, J. T.: Pyogenic Infections of the Urinary Tract. Canad. Med. Ass. J. *51*: 469, 1944.

5. Lewis, W. H. Jr., and Alving, A. S.: Changes with Age in the Renal Function of Adult Men. Am. J. Physiol. *123*: 500, 1938.
6. Shock, N. W.: Kidney Function Tests in Aged Males. Geriat. *1*: 232, 1947.
7. Carroll, G., Lewis, B., and Kappel, L.: Further Clinical and Laboratory Observations of Mandelic Acid. J. Urol. *39*: 710, 1938.
8. Rantz, L. A., and Keefer, C. S.: Sulfanilamide in Treatment of Infections of the Urinary Tract Due to B. coli. Arch. Int. Med. *65*: 993, 1940.
9. Burns, Edgar: An Evaluation of Urinary Antiseptics. South. Med. J. *37*: 320, 1944.
10. Spink, W. W.: Sulfanilamide and Related Compounds. Year Book Publishers, Chicago, 1942.
11. Cook, E. N.: Chemotherapy in Infections of the Urinary Tract. J. Urol. *39*: 692, 1938.
12. Ezickson, W. J.: Relationship of Urinary Tract Infection to Urolithiasis. J. Urol, *51*: 431, 1944.
13. Helmholz, H. F.: Use of Sulfathiazole as a Urinary Antiseptic. Proc. Staff. Meet. Mayo Clin. *15*: 651, (October 9) 1940.
14. Lehr, D.: Inhibition of Drug Precipitation in Urinary Tract by Use of Sulfonamide Mixtures. Proc. Soc. Exper. Biol. and Med. *58*: 11-14, 1945.
15. Idem: Prevention of Renal Complications by Therapeutic Employment of Sulfonamide Mixtures. J. Urol. *55*: 548, 1946.
16. Editorial. Prevention of Renal Complications by the Use of Sulfonamide Mixtures. New Eng. J. Med. *236*: 842, 1947.
17. Exley, M.: Penicillin Treatment of Urinary Tract Infections. J. Urol. *55*: 435, 1946.
18. Wolinsky, E., and Steenken, W.: Streptomycin and Penicillin Resistant Staphylococci; Influence of pH, Body Fluids on Streptomycin Action. Proc. Soc. Exper. Biol. and Med. *62*: 162, 1946.
19. Anderson, D. G., and Jewell, M.: The Absorption, Excretion and Toxicity of Streptomycin in Man. New Eng. J. Med. *233*: 485, 1945.
20. Buggs, C. W., Pilling, M. A., Bronstein, B., and Hirshfeld, J. W.: The Absorption, Distribution and Excretion of Streptomycin in Man. J. Clin. Invest. *25*: 94, 1946.
21. Pulaski, E. J.: Streptomycin in Surgical Infections: 11. Infections of the Genito-urinary Tract. Ann. Surg. *124*: 392, 1946.

MEDICAL SOCIETY FOR CARE OF ELDERLY FORMED IN ENGLAND

On September 27, 1947 at St. John's Hospital, Battersea, England, a new society was formed, called the "Medical Society for the Care of the Elderly." The members include Lord Amulree, Dr. E. B. Brooke, Dr. L. Z. Cosin, Dr. Trevor Howell, Dr. F. Mitchell, Dr. E. L. Sturdee, Dr. Marjory Warren, and Dr. T. Wilson. Many of the members are on the B. M. A. committee on the Care of the Aged and Infirm. Others are medical officers of the Ministry of Health, or physicians associated with Dr. Howell's Geriatric Unit.

The objects of this new society are:

(1) To encourage better standards of medical care for the elderly.
(2) To collate at one central point the activities of those engaged in the care of the aged.
(3) The discussion of common administrative and clinical problems.
(4) To forward research and investigations in old age.

GENERAL OXIDATIVE PROCESSES WITH RELATION TO DEGENERATIVE CHANGES IN THE BODY

William B. Kountz, M.D., and Margaret Chieffi, M.D.

For a number of years it has been our practice to carry out routine basal metabolic rate estimations on all patients in our care, whether these be hospital inmates or visitors to the private clinic. A study of the figures so obtained has revealed several facts which we consider to be of interest.

In the young age groups (before 40 years of age) our patients have basal metabolic rates comparable with the accepted normal standards and significant variations are always associated with clinical evidence of glandular dysfunction or other states known to cause variation in the metabolism.[1] We find, however, that in the middle and later decades of life there is wide variation in the basal metabolic rate from individual to individual and this variation is not associated with the known causes of metabolic disturbance such as thyroid dysfunction,[2] leukemia,[3] etc.

In a careful analysis of our patients we have found that certain factors occur fairly constantly in conjunction with these variations in heat production. It is the purpose of this paper to point out these factors and to attempt to discuss their significance in relation to the processes of degeneration. The fact that heat production under standard conditions is less uniform in older individuals than in younger ones is well known and has led to difficulty in establishing standards for the later decades.

We find that the figures given by different physiologists and clinicians who have made extensive and detailed metabolic studies vary slightly with regard to young individuals. Figures from different clinics and even different countries show considerable agreement. For example, Harris and Benedict[4] give 38.7 calories per square meter per hour as the average heat production for a normal adult between 20 and 40 years. Aub and Du Bois[5] for a similar group give 38.2 calories per square meter per hour as the average. Even figures showing some appreciable divergence fall within the accepted limits of normal variation and are to be considered due to climatic, dietary and other factors which vary from region to region.

However, when we study the figures given for the later decades we find very great discrepancy between those of one physiologist and another. In order to emphasize this we will give a few figures taken from the liter-

From the St. Louis City Infirmary Hospital and Washington University School of Medicine, St. Louis, Missouri.

Read before the 4th annual meeting of the American Geriatrics Society at Atlantic City, New Jersey, June 6, 1947.

ature. Aub and Du Bois[6] in a study of six individuals between the ages of 77 and 83 found an average heat production of 35.1 calories per square meter per hour. Albergo,[7] in Italy, on a study of individuals from 71 to 79 years found a variation of from 33 to 38 calories per square meter per hour, and in individuals from 80 to 85 a variation of from 28 to 37 calories per square meter per hour. Benedict and Meyer[8] in a study of 23 normal women between the ages of 66 and 86 found the figures ranged from +15 to —24 when compared with accepted standards. That the diminution in heat production is not directly proportional to the chronological age of the individual is shown by figures given by Kisé and Yoshiaki[9] who found one active old man of 93 years who was producing 34.1 calories per square meter per hour and one woman of 75 who was producing only 26.5 calories per square meter per hour. Finally, Benedict and Root[10] examined several old men and found one 4.5 below Harris and Benedict standards, and the others ranging from 17 to 28 above the standards.

Du Bois observes, "We may conclude that there is a great deal of variation in old people, probably depending upon the degree of senility."

It is this factor of senility or degeneration that we are desirous of evaluating, and of investigating what role, if any, the variation in the metabolic processes of the body plays in its production. Obviously, the wide variations in the figures obtained by the investigators is due to the fact that the individuals chosen as normal or average for their age group presented considerable variation from one another with regard to organic state and degree of degeneration. In young subjects it is a simple matter to decide who is a normal individual and who is not. The older subject presents a more complex problem. After mid-life degenerative processes have commenced, and the deleterious effect of these processes is seen to a greater or lesser degree in practically all individuals.

In establishing standards, therefore, we are obliged to consider as normal, individuals whose organism has undergone definite pathological change. It is most difficult to decide what degree of degenerative change is to be considered normal for any decade and what degree is to be considered excessive or abnormal. Although the accepted standards in advanced life are necessarily worked out on a somewhat arbitrary conception of the normal, they do, however, represent the averages obtained from a considerable number of individuals in fair health and serve as standards of comparison.

Actually, for the purpose of our studies it has not been necessary for us to decide which of the figures given by the investigators corresponds to the level of optimal heat production. Rather, are we interested in comparative studies and our aim is to determine, if possible, some of the factors causing this variation or instability in the metabolic processes which occurs in later life.

We examined a large group of patients in whom, so far as could be determined, degenerative changes were the only or principal cause of ill

health and found that in some heat production was relatively high and in others relatively low. We have been impressed by the fact that these differences in heat production were associated with certain other clinical findings sufficiently often to suggest a very definite relationship. In our study we grouped the patients according to clinical criteria in an attempt to determine which clinical states were more frequently associated with lower heat production and which with higher heat production. The criteria used in grouping our patients and the facts resulting from a study of the level of heat production predominating the different groups will now be discussed.

MATERIAL STUDIED

Five hundred patients were studied, many being followed over a period of several years. All, with the exception of a small control group, were suffering from degenerative changes. Patients with neoplasms, clinical evidence of glandular dysfunction and pathological states due to obvious acute or chronic infections were excluded from the study.

We divided our patients into three groups according to the degree of degeneration found in the organs susceptible to examination. These groups were 1) early degeneration, 2) moderately advanced degeneration, and 3) advanced degeneration.

Early degeneration. In the first group we placed those patients whose symptoms were minimal. The chief complaints were feelings of tiredness, nervousness and weakness, and inability to maintain activity at its previous level. Rapid heart rate and abdominal distension were frequent symptoms. These patients noticed a definite lessening of mental and physical vigor, often without having any precise symptoms pointing to definite pathology. On physical and laboratory examination, the more common findings pointing to the onset of degenerative change were moderate rise in blood pressure without renal, retinal or cardiac involvement; some lowering of vital capacity; increasingly presbyopic vision and evidence of early hypertrophic change in the joints. Left axis deviation was found in the E.C.G. of many, but those with evidence of myocardial involvement were excluded from this group.

Moderately advanced degeneration. In the second group we placed those patients in whom there was very definite evidence of degeneration, with clear-cut symptomatology and obvious physical findings, but who were still capable of leading a moderately active life. The most frequent symptoms in this group were precordial discomfort, moderate dyspnea on exertion, irregularity of heart beat, headaches, tingling and numbness of extremities due to peripheral circulatory disturbances, arthritic pains with stiffness of joints, nocturia, and in many, some loss of memory and commencing decline in the mental powers. These patients showed definite degenerative changes on physical and laboratory examination. The more frequent findings were peripheral arteriosclerosis, lengthening and calcification of the

TABLE 1

THE BASAL METABOLIC RATE IN PATIENTS WITH EARLY DEGENERATIVE CHANGE COMPARED WITH CONTROLS.

A. CONTROL GROUP OF NORMAL INDIVIDUALS
TOTAL - 39

Summary showing % of patients with rates above and below normal

Percentage range of metabolic rates	below −20	−19 to −16	−15 to −11	−10 to −1	0 to +10	+11 to +15	+16 to +20	above +20	below 0	below −10	normal −10 to +10	above +10
Number of Cases			1	9	28	1				1	37	1
Percent of Patients			2.5	23	72	2.5				2.5	95	2.5

B. PATIENTS WITH EARLY DEGENERATIVE CHANGE
TOTAL - 134

Summary showing % of patients with rates above and below normal

Percentage range of metabolic rates	below −20	−19 to −16	−15 to −11	−10 to −1	0 to +10	+11 to +15	+16 to +20	above +20	below 0	below −10	normal −10 to +10	above +10
Number of Cases	33	25	36	31	7		1	1	125	94	39	2
Percent of Patients	24.5	19	27	23	5		.7	.7	93	70.5	28	1.4

In control group majority of patients have normal basal metabolic rates.
In group with early degeneration majority of patients have basal metabolic rates below normal.

aorta, and myocarditis due to arteriosclerosis of the coronary vessels. Hypertension was a very common finding associated with cardiac enlargement and retinal changes. In many there was impaired renal function as shown by concentration-dilution tests. Emphysema was frequent. The majority of these patients had obvious external evidence of aging, such as arcus senilis, atrophic, redundant skin and hypotrophic and hypotonic musculature, but a few were suffering from advanced pathology due to degeneration of a vital organ or organs while still maintaining a relatively youthful appearance.

Advanced degeneration. The third group of patients consisted of those individuals in whom degeneration had progressed to the point of causing complete breakdown of the organism and a state of permanent invalidism. The more frequent causes of this breakdown were severe myocardial degeneration with resulting heart failure; acute coronary occlusion; cerebral deterioration, renal failure, general arterial degeneration, etc.

METHODS OF STUDY

The metabolic rate was estimated under standard conditions with expert technicians performing the test. In all cases, several evaluations were made at each sitting and the lower figure was taken as being the more accurate. If there was any marked discrepancy between values obtained, the tests were repeated. Unusual or unexpected results were always rechecked. The

standards used were those of Du Bois modified by Boothby and Sandiford. The machine used was the Sanborn. We tabulated our results for each group according to the percentage variation from the standard figures.

SUMMARY OF RESULTS

We will examine first the figures obtained in our *first group*. This group consisted of 134 individuals having the characteristics previously described. A study of Table 1 shows one very striking fact. Ninety-three per cent of these patients have metabolic rates below 0, and 70.5 per cent have rates below —10, i.e., below the accepted lower limit of normal variation. Twenty-eight per cent of the patients have normal rates, i.e., between —10 and +10, and only 1.4 per cent are above +10. The lowering of the oxidative processes in these individuals is very obvious. The ages of these individuals varied from 40 to 65 but the largest group was from 45 to 50.

In Table 1 we also show figures obtained from a group of *control patients*. The group consisted of 39 patients corresponding in age to the younger individuals in our early degenerative group. They were either perfectly healthy individuals or were suffering from disorders such as gastric ulcer, colitis, etc., but showing no evidence of degenerative change. Of these subjects 95 per cent have basal metabolic rates within normal limits, that is from —10 to +10; 2.5 per cent are above +10 and 2.5 per cent are below —10.

TABLE 2

THE BASAL METABOLIC RATE IN PATIENTS WITH MODERATE DEGENERATION.

TOTAL - 132 — *Summary showing % of patients with rates above and below normal*

Percentage range of metabolic rates	below −20	−19 to −16	−15 to −11	−10 to −1	0 to +10	+11 to +15	+16 to +20	above +20	below 0	below −10	normal −10 to +10	above +10
Number of Cases	14	9	19	54	23	8	2	3	97	42	77	13
Percent of Patients	11	7	14	41	17	6	2	2	73	32	58	10

Number of patients with low basal metabolism is less than group with early degeneration.

Our *second group*, consisting of patients with moderately advanced degeneration, included 132 patients. (See Table 2.) In this group 32 per cent of the patients have rates below standard and although not so striking as the 70.5 per cent in our *first group*, it is still a considerable number. Fifty-eight per cent of the patients have basal metabolic rates within normal range and 10 per cent are above +10.

Our *third group*, made up of patients with advanced degeneration, consisted of 196 individuals. (See Table 3.) In this group, only 10 per cent of

TABLE 3

THE BASAL METABOLIC RATES IN PATIENTS WITH ADVANCED DEGENERATION.

TOTAL - 196

Summary showing % of patients with rates above and below normal

Percentage range of metabolic rates	below −20	−19 to −16	−15 to −11	−10 to −1	0 to +10	+11 to +15	+16 to +20	above +20	below 0	below −10	normal −10 to +10	above +10
Number of Cases		7	12	53	77	18	10	19	72	19	148	47
Percent of Patients		4	6	27	39	9	5	10	37	10	66	24

In this group with advanced degeneration, majority of patients have normal rates or rates above normal.

the patients have metabolic rates below normal, 66 per cent of the patients have rates corresponding to normal standards, and 24 per cent are above normal. It should be mentioned here that the patients in this group who were suffering from decompensation with marked dyspnea were excluded, it having been established that such a state will raise the basal metabolic rate. Peabody, Meyer and Du Bois,[11] who examined a number of patients with dyspnea, give figures as high as +28, +41 and +49 per cent. In these patients, tests were carried out when relative cardiac efficiency had been restored by rest and indicated therapy. For these latter groups it was not possible to establish controls free from degenerative change, since in these age groups degeneration is always present to some extent.

DISCUSSION OF RESULTS

In an examination of our figures, in spite of the fact that there is still a considerable amount of variation in values, one can, however, detect certain tendencies. The most striking of these is in our first group where 70.5 per cent of the individuals with early degeneration have heat production below normal, and those with basal metabolic rates within normal range are found towards the lower limit of normal. This suggests some relationship between the onset of degeneration and lowering of the oxidative processes of the body.

It is possible that the processes of degeneration already commenced cause a slowing down of oxidation within the tissues, or, on the other hand, it may be that the oxidative mechanism is one of the first to be interfered with in the aging organism, and this lessening of metabolism in turn promotes or accelerates degeneration of the tissues. Even in perfectly healthy individuals the number of physiological factors causing variation in basal metabolic rate is considerable.

We will now discuss some of the more important physiological processes undergoing modification during the degenerative period of life and the part

they may play in altering the metabolism of the aging organism. It is well known that heat production per square meter of surface area declines with age, and in mid-life we have an acceleration of this tendency. This is found even in childhood. Children have a much higher heat production per square meter than adults. The following figures given by Nakagawa[12] show this very clearly. Children of 4 years have an average heat production of 54.8 calories per square meter per hour; children of 7 years have a heat production of 50.38 calories per square meter per hour and children of 12 years a heat production of 41.02 calories per square meter per hour. The figure for adults of 20 years is given as 37.5 calories per square meter per hour.

It is during the period of mid-life that the sex glands are undergoing involutional change and this probably has a direct effect on the metabolic processes and also an indirect but even more important effect through the other glands of internal secretion. Modification of one gland of internal secretion cannot but disturb the delicate equilibrium of the hormonal system. In certain investigations in which we are at present engaged we have been able to study the effect of the ovarian hormones on elderly women. We have taken a group of females over 75 years of age and through the administration of adequate amounts of estrogenic substance and proluton have caused them to recommence menstruating. In a number of these women in whom, to date, regular menstrual cycles have been reestablished for more than a year, we have noticed a definite rise in the basal metabolic rate. The present figures average 5 per cent higher than those taken before hormones were administered.

The influence of sex on basal metabolic rate was one of the first to be noted by the physiologists. Magnus-Levy and Falk[13] found the standards for women 5 per cent lower than for men. Studies carried out later by Benedict[14] gave standards 12 per cent lower for women. Various theories have been advanced to explain this fact. It was thought to be due to the greater thickness of the adipose tissue in the female and also to the greater muscular activity of the male. These cannot be the only reasons, however, since the difference is marked in early childhood before the development of the somatic differences between the sexes. The evidence would point strongly to some direct influence of hormones on the oxidative processes. From this point of view it would be interesting to study the changes during puberty and the menopause but the evidence here is somewhat inconclusive. Most observations point to a rise in metabolism just before puberty and fall immediately afterwards. The difference between the sexes is accentuated at puberty. This would suggest that the male sex hormone stimulates the oxidative processes to a greater extent than does the female sex hormone—the difference between the sexes being great throughout life and more marked during the period of greater activity of the sex glands.

In support of the opinion that male sex hormones stimulate metabolism is a case reported by Loewy and Kaminer[15] of diminished metabolism result-

ing from traumatic castration. Many other workers,[16] however, in a survey of a number of castrates have found no evidence of lowering of heat production. In the female the influence of sex hormones is reflected in the variations occurring during the menstrual cycle. The metabolism is lowest during the flow and then gradually rises to a peak just before the next period commences. There is also, in some cases, a rise on the 14th and 15th days after the period.[17]

The menopause, with regard to metabolism, has received very little attention and the evidence here is rather conflicting. Also the effect of the menopause is somewhat difficult to evaluate since, in most instances, it is not an abrupt occurrence but is drawn out over a period of years and would necessitate a prolonged period of study. Boothby and his associates in their studies have found a drop of 4 per cent in the years immediately following the menopause. It would appear that artificial menopause causes more pronounced fall in the basal metabolic rate. Kraul and Halter[18] found a fall of 20 per cent in patients subjected to X-ray of the ovaries. Other authors have found a marked fall in some cases of surgical castration and no change in other cases.

The problem of nutrition is also of great interest because evidence is accumulating that during the period of degeneration the utilization of food stuffs by the tissues is interfered with and a state of actual undernutrition results, even though the individual is ingesting apparently adequate amounts of food. The influence of undernutrition on the basal metabolic rate is very striking. When the diet is adequate in calories it would appear that the type of food administered, that is, whether predominantly fat, carbohydrate or protein, is of only slight significance. However, Wakeman and Hansen[19] observed that a series of vegetarians had rates definitely below normal and Wishart[20] considers that a high protein diet raises the metabolic rate. The effect of undernutrition is, nevertheless, very definite as shown by experiments carried out by Benedict.[21] He placed a group of normal young men on a diet of 1400 calories a day for 3 weeks and found that their heat production per square meter was reduced by 27 per cent.

The role of the adrenal and thyroid glands in stimulating the metabolism is too well known to require discussion.

The effect of muscular activity on the heat production is of interest, since mid-life is a period when this factor becomes limited, often as a result of faulty habits rather than from inability of the body to undertake exercise. There is much evidence to suggest that muscular activity stimulates heat production. Some workers consider that athletes have figures as high as 7 per cent above the standards for non-athletes. Du Bois and Gephart,[22] however, consider 2.5 per cent as more correct. The effect of restricted activity was studied by Lusk[23] in a caged dog. He noted a steady decline in the metabolism.

It is obvious that there are many physiological factors which, under-

TABLE 4

PATIENTS WITH EARLY AND MODERATE DEGENERATIVE CHANGE HAVING LOW BASAL METABOLIC RATES.

Table shows rise of basal metabolic rates resulting from treatment with thyroid extract, organic iodine etc.

NAME	AGE	CHIEF COMPLAINTS	CHIEF PHYSICAL FINDINGS	DATE	BMR.
Ben H.	55	Weakness Loss of virility	Generalized arteriosclerosis	1937 1940 1941	−30 −12 +5
Charles H.	70	Headaches Some shortness of breath	Hypertension Emphysema Arteriosclerosis	1941 1945 1947	−17 +14 +2
Mrs. Charles H.	65	Nervousness Weakness	Arteriosclerosis with mild myocardial damage	1941 1945	−24 −12
Edward C.	45	Tachycardia General weakness	E.C.G. suggestive of coronary artery disease	1945 1/46 11/46	−17 −9 −2
Mrs. Edward C.	49	Weakness Tachycardia	Evidence of mild coronary artery disease	1945 1946	−28 −16
Alice A.	63	Dizziness Headache	Moderate hypertension Generalized arteriosclerosis	1946 10/45 1/46 11/46 1947	−16 −14 0 0 +7
Ernie D.	69	Weakness Some shortness of breath	Generalized arteriosclerosis Evidence of coronary artery disease	1940 1945 1946	−31 −14 −4
Elsie H.	64	Muscular rheumatism Arthritis	Generalized arteriosclerosis Hypertrophic arthritis	1944 1945 1947	−27 −20 +11
Laura H.	45	Anginal attacks	Moderate myocarditis of arteriosclerotic origin	1945 1946 1947	−24 −15 −4
Claude H.	57	Headaches Anginal attacks	Hypertension Myocarditis	1943 1945 1946	−15 −10 −1
Mrs. Pat E.	67	Shortness of breath Weakness	Arteriosclerosis Pulmonary fibrosis Some myocardial damage	1941 1942 1947	−26 −17 0
Henry G.	66	Headaches Fainting attacks	Arteriosclerosis Myocarditis of arteriosclerotic origin	1944 1945 1946	−14 −10 +5
Richard G.	60	Anginal attacks	Arteriosclerosis Early myocardial damage	1944 1945 1947	−28 −15 −11
Augustine L.	53	Short of breath Fainting attacks	Generalized arteriosclerosis	1945 1946 1947	−25 −20 −13
Harold F.	57	Anginal attacks	Arteriosclerotic coronary artery disease	1942 1944 8/46 11/46	−23 −13 −12 −10

Continued on next page

TABLE 4—Continued

NAME	AGE	CHIEF COMPLAINTS	CHIEF PHYSICAL FINDINGS	DATE	BMR.
Ada H.	65	Shortness of breath	Myocardial damage	1945	−20
			Arteriosclerotic coronary	1/46	−18
			artery disease	1/47	−16
				3/47	−7
Patricia H.	64	Weakness	Myocardial damage	1942	−19
		Anginal attacks	Arteriosclerotic coronary	6/42	−12
			artery disease	1946	−9
William B. A.	79	Painful joints	Generalized arteriosclerosis	1940	−18
		Prostatitis	Hypertrophic arthritis	1942	−12
				1945	−12
				1946	0
Will C.	69	General weakness	Hypertension	1943	−24
		Nocturia	Generalized arteriosclerosis	1945	−19
		Headache		1946	−14

All these patients showed marked clinical improvement.

going modification during mid-life, may cause a reduction in the oxidative processes. We are of the opinion that this reduction in metabolism, whatever be the factor or factors instrumental in its production, is deleterious to the organism and tends to accelerate degeneration in the tissues. Working on this hypothesis, we chose a group of patients having low metabolic rates and early degenerative changes and stimulated the metabolism by the administration of drugs. Small doses of thyroid extract from gr. ¼ to gr. 1 daily were used in conjunction with organic iodine. In women, when indicated, 1 mg. of stilbesterol daily was administered and in males 5 mgs. of testosterone propionate. Patients who showed evidence of hypotrophic change in muscles and skin were given amino acid preparations to supplement the diet. Care was taken to elevate the basal metabolic rate very slowly and the patient's response to the drugs was controlled carefully. In our patients the response to this treatment was very satisfactory. Stimulation of the oxidative process to a normal level was accompanied, in the majority of cases, by marked clinical improvement, and in following the patients over a period of years we found that the degenerative changes did not progress to an appreciable extent, whereas in control individuals treated only symptomatically there was definite progression of degeneration. The effect of treatment on the metabolic rate is shown in Table 4.

Although early degeneration is associated with low basal metabolic rates, more advanced degeneration tends to raise the rate. This is shown in the summary of the figures. In *the first group,* 70 per cent of the individuals had basal metabolic rates below —10. (See Table 4.) In *the second group* with moderately advanced changes, only 32 per cent of the individuals had metabolic rates below normal. (See Table 5.) This is still an appreciable number but the tendency towards low metabolic rates is not so marked as in

TABLE 5

SUMMARY OF THE 4 GROUPS SHOWING % OF PATIENTS IN EACH GROUP HAVING NORMAL METABOLIC RATES OR RATES ABOVE OR BELOW NORMAL.

Patients in percent

Percentage range of metabolic rates	below 0	below −10	normal −10 to +10	above +10
Control Group		2.5	95	2.5
Early Degeneration	93	70.5	28	1.4
Moderate Degeneration	73	32	58	10
Advanced Degeneration	37	10	66	24

the patients with commencing degeneration. In *the third group,* consisting of patients in whom degenerative changes have caused serious pathological states, we find that only 10 per cent of the patients have metabolic rates below normal, 66 per cent have rates within normal limits and 24 per cent have rates above normal. An examination of these figures shows that low heat production is associated with commencing degeneration. In patients with advanced degeneration, however, a rising metabolic rate would appear to be a sign of loss of reserve on the part of the organism. When the organism has deteriorated beyond a certain point the oxidative processes are stimulated and the basal metabolic levels approach those obtained in healthy individuals. In some cases, levels considerably above normal are reached.

We have been able to study a group of inmates of the chronic disease hospital over a number of years and have found the same variations in the metabolism of individuals as was suggested by a study of these groups. We found that these patients, all of whom were suffering from moderately advanced degenerative changes, had low metabolic rates as long as fair health was maintained. Successive estimations made as the clinical condition deteriorated showed the metabolic rate to be rising. (See Table 6.)

It is obvious that the return of the basal metabolic rates in these individuals to apparently normal levels is not a sign that the body processes are returning to normal. Evidently, when the organism is overtaxed, the metabolism is in some way stimulated. A perusal of the figures in the literature suggests that a rising metabolic rate is a frequent finding in patients seriously ill from various causes. For example, Becker[24] observed that 4 out of 7 patients with severe pernicious anemia had elevated rates. Boothby and Sandiford[25] in 55 cases of splenic anemia found 21 patients with distinctly high levels. Mowrer and Siebert[26] found among 20 nephritics that 4 who were gravely ill had very high metabolic rates.

To study further the variations in metabolism with varying clinical states, we chose another group of patients. These individuals, when they first came under our observation, were debilitated and, hence, had relatively high rates. In many of these, adequate therapy caused marked clinical im-

TABLE 6

GROUP OF PATIENTS WITH ADVANCED DEGREE OF DEGENERATION SHOWING RISE OF BASAL METABOLIC RATE AS CLINICAL CONDITION DETERIORATES.

NAME	AGE	CHIEF COMPLAINTS	CHIEF PHYSICAL FINDINGS	DATE	BMR.
Mary F.	78	Weakness Residual of stroke	Arteriosclerosis Myocarditis Progressive deterioration	1944 1946 2/47	−18 −10 0
William R.	64	Weakness Shortness of breath	Myocarditis Heart block with Stokes- Adams syndrome	1944 1945 1946 1947	−22 −17 −16 +1
Job B.	60	Shortness of breath Edema	Auricular fibrillation Progressive heart failure	1944 1947	−25 0
Harold J.	52	Headache Hemorrhage from kidneys	Hypertension Arteriosclerosis Myocarditis Marked deterioration	1942 1944 1945 12/46	−20 −10 −2 +19
James G.	80	Senility Fibrillation	Auricular fibrillation Progressive heart failure	1946 1947 (Died later)	−8 +19
Mabel O.	63	Short of breath Edema of ankles	Auricular fibrillation Progressive failure	1946 1947	−3 +17
Annie B.	86	Senility Stroke	Generalized arteriosclerosis Cerebral hemorrhage	1944 1946	−11 +3
Bertha P.	57	Headaches Stroke	Hypertension Cerebrovascular accident Deteriorating	1943 1945 1946 1947	−22 −20 −10 +1
Lillie F.	78	Short of breath Edema	Auricular fibrillation Progressive failure	1945 4/46 1947	−17 −13 +3
Sarah D.	77	Anginal attacks Arthritis	Myocarditis Coronary occlusion Progressive failure	1943 1946 1947	−21 −7 +8
William R.	72	Headaches Angina	Hypertension Arteriosclerosis Heart failure	1943 1945 1946 (Died later)	−10 +11 +19
Martha Z.	82	Short of breath Edema of ankles	Auricular fibrillation Progressing heart failure	1945 1947	−1 +14
Alex D.	50	Headache Tachycardia	Hypertension Greatly enlarged heart Arteriosclerosis Progressive deterioration	1944 1945 10/45 1/46	−12 −8 +8 +11

provement and in these we found that along with the clinical improvement there was frequently a decline in the basal metabolic rate. (See Table 7.)

When the patients had improved with the therapy and the metabolism was fairly constant at its lower level we then stimulated the metabolic processes further by androgens, estrogens, thyroid, iodine and amino acids.

TABLE 7

PATIENTS WITH ADVANCED DEGENERATION IN WHOM IMPROVEMENT IN THE CLINICAL CONDITION RESULTS IN LOWERING OF THE BASAL METABOLIC RATE.

NAME	AGE	CHIEF COMPLAINTS	CHIEF PHYSICAL FINDINGS	DATE	BMR.
John D.	75	Anginal attacks	Generalized arteriosclerosis	1/46	−10
			Arteriosclerotic myocarditis		
			Onset of heart failure	6/46	+3
			Clinical improvement with treatment	10/46	−16
Arnold M.	75	Shortness of breath	Generalized arteriosclerosis		
		Edema	Myocarditis	1943	+5
		Weakness	Auricular fibrillation		
			Clinical improvement		
			Relative cardiac efficiency	1944	−15
			Continued treatment with thyroid etc.	1945	+2
Hilda W.	60	Weakness	Aortic insufficiency		
		Cardiac irregularity	Degenerative arthritis	1946	+9
		Nervousness	Cardiac decompensation		
			Clinical improvement with Adequate treatment	1947	−12
Ida H.	68	Weakness	Evidence of coronary artery disease	1944	−2
		Shortness of breath	Enlarged heart		
		Edema	Condition improved with treatment	1945	−10
Andrew E.	46	Anginal attacks	E.C.G. evidence of arterio-		
		Degenerative arthritis	sclerotic coronary artery disease	1940	+1
			Severe myocardial damage		
			Deterioration in clinical condition	1943	+14
			Improvement with treatment	1946	−8
Lester C.	52	Headaches	Severe hypertension, myo-		
		Shortness of breath	carditis		
			Clinical condition very unsatisfactory	1945	+30
			Improvement with treatment	2/46	−11
			Commenced treatment with thyroid etc.	11/46	−6
Mary B.	70	Headaches	Hypertension		
		Arthritic pains	Degenerative arthritis	2/46	−1
		Edema of ankles	Coronary artery disease		
			Clinical improvement with treatment	6/46	−9
Alice A.	41	Acute coronary occlusion	Anterior myocardial infarct		
			Clinical condition poor	8/46	+4
			Improvement in clinical condition	10/46	−17
			Treated with thyroid etc.	1947	−10
Thomas H.	65	Anginal attacks	Generalized arteriosclerosis		
		Signs of heart failure	Myocarditis	1945	+1
			Clinical improvement	1946	−7
Mary H.	63	Precordial pain	Myocardial damage		
		Shortness of breath	Cardiac enlargement	6/46	+5
			Clinical improvement with treatment	11/46	−9

The administration of these substances was followed by a rise in metabolic rate. This second rise would appear to be of a different nature from the first. The first one, we believe, was due to a loss of reserve on the part of the organism. The second one was due to direct stimulation of the oxidative processes of the body.

SUMMARY

1) It would appear that the oxidative processes in the degenerating organism pass through a cycle.
2) There is first a period of decline in metabolism associated with the commencement of degeneration. Adequate treatment at this point, directed towards stimulation of the metabolism, will result in a rise in the heat production to a normal level. This is frequently accompanied by clinical improvement and retardation of the degenerative process.
3) When degeneration continues, producing serious pathological states and resulting in breakdown of the organism, the metabolic rate no longer remains low but rises. This rise is of bad prognostic significance and appears to be evidence of failing reserve on the part of the organism. Even at this point, if adequate therapy is undertaken, clinical improvement may result, in which case lowering of the metabolism usually occurs. In these debilitated individuals who have been capable of clinical improvement in response to therapy, further treatment directed towards stimulation of the oxidative processes will result in a rise of metabolism to a normal level. Maintenance of the metabolism at this level is associated with clinical improvement.

REFERENCES

1. Harris & Benedict: A Biometric Study of Basal Metabolism in Man. Carnegie Institute of Washington, Pub. No. 279, 1919.
2. Means & Aub: Jour. Am. Med. Association, 69:33, 1917.
Means & Burgess: Arch. of Internal Med., 30:507, 1922.
Means & Lerman: Arch. of Internal Med., 55:1, 1935.
3. Boothby & Sandiford: Jour. Biological Chem., 54:783, 1922.
McAlpin & Sanger: Am. Jour. Med. Sciences, 167:29, 1924.
4. Harris & Benedict: A Biometric Study of Basal Metabolism in Man. Carnegie Institute of Washington, Pub. No. 279, 1919.
5. Du Bois: Basal Metabolism in Health and Disease. Lea & Febiger, Phil., 1936.
6. Aub & Du Bois: Clin. Cal. 19, Arch. of Internal Med., 19:823, 1917.
7. Albergo: Minerva Medica Torino, 2:678, 1932.
8. Benedict & Meyer: Am. Philos. Soc., 71:143, 1932.
9. Kise & Yoshiaki: Jour. Lab. and Clin. Med., 19:1073, 1934.
10. Benedict & Root: New England Jour. Med., 211:521, 1934.
11. Peabody, Meyer & Du Bois: Clin. Cal. 16, Arch. Int. Med., 17:980, 1916.
12. Nakagawa: Am. Jour. Diseases of Child. 47:963, 1934; 48:39, 1934.
13. Magnus-Levy & Falk: Arch. of Anat. in Physiol., Suppl.; P. 314, 1899.
14. Benedict: Am. Jour. Physiol., 85:607, 1928.
15. Loewy & Kaminer: Berl. Klin. Wehnschr, 53:1123, 1916.
16. Grafe: Ergeb d. Physiol; 21 Part II, 1, 1923.
17. Du Bois: Metabolism in Health and Disease, Lea & Febiger, Phil., 382, 1934.

18. KRAUL & HALTER: Ztschr, f. Geburts u. Gynak, 87:606, 1917.
19. WAKEMAN & HANSEN: Jour. Biol. Chem., 97:155, 1932.
20. WISHART: Jour. Physiol., 65:243, 1928.
21. BENEDICT, MILES, ROTH & SMITH: Carnegie Institute of Washington, Pub. No. 280, 1919
22. GEPHART & DU BOIS: Clin. Cal. 13, Arch. Int. Med., 17:902, 1916.
23. LUSK & DU BOIS: Jour. Physiol., 59:213, 1924.
24. BECKER: Acta Med. Scandin., 63:478, 1925.
25. BOOTHBY & SANDIFORD: Jour. Biol. Chem., 54:783, 1922.
26. MAURER & SIEBERT: Ztschr, f. Klin. Med., 101:47, 1924
27. KOUNTZ, HOFSTATTER & ACKERMANN: Nitrogen Balance Studies in Elderly People. Geriatrics, Vol. III, No. 3. P. 173, 1947.

GROUP THERAPY SERIES FOR THE MIDDLE-AGED AND OLDER

Personal problems considered by others who are facing similar situations form the basis for the two group therapy series now being held in New York City. The discussions are led by George Lawton, Ph. D., consulting psychologist, author of *Aging Successfully*, and attending psychologist, Psychiatry Department, Vanderbilt Clinic, Presbyterian-Columbia Medical Center.

Participants must subscribe for either Series A, ages 35-59, or Series B, ages 60 and over. Each series runs for ten meetings with discussions lasting about 75 minutes. The total fee for the ten sessions is $50, payable in advance.

Additional information may be obtained from Evelyn E. Smith, secretary to Dr. George Lawton, 41 West 82nd St., New York 24, N. Y.

Get fat and die young; This is the conclusion one would reach from the life expectancy table of the life insurance companies. The ratio of life expectancy of overweight men and women decreases proportionately to each ten pounds of overweight, consequently there are more life insurance rejections for obesity than any other condition. It is pointed out that 25 pounds of extra weight afflicting those between the ages of 45 and 50 reduces life expectancy by 25 per cent. *Hospital Topics,* August, 1947.

CARE OF THE AGED AND OF THE CHRONIC SICK IN GREAT BRITAIN

E. L. Sturdee, M.D., M.R.C.P.*

In his famous letters, Walter Page suggests that the English are inclined to continue habits and customs long after the reason for them has disappeared. There is no doubt a good deal of truth in this, but it often happens that over a period of years changes do take place and this is noticeable in the evolution of medical and general public opinion towards the care of the chronic sick and the aged.

Originally, the care of the destitute and the sick unable themselves to afford medical and nursing care was undertaken by the religious orders.

In the forty-third year of the reign of Queen Elizabeth, there was enacted the Great Charter for the Relief of the Poor, which placed the duty of caring for the destitute on the parishes in which they lived. A recognition of the difference between the able-bodied and the sick poor is seen in the Medical Relief Disqualification Act of 1885, where it is laid down that medical relief may be supplied, at the charge of the poor rate, on the Poor Law Medical Officers' recommendation, but shall not disqualify the recipient from voting in Parliamentary and Local Government elections, whereas persons receiving assistance from the poor rates were normally inadmissible as voters.

In every parish there were appointed Guardians of the Poor, and this body usually appointed one or more of the local medical men to attend the destitute sick. Strictly, such medical attention was available only to the necessitous poor, but gradually it became recognized that a man or woman might be medically destitute even though he or she were not penniless—for example, a sick person living alone with no one to attend him.

In the larger towns, as time went on, the medical staffs were increased and improved, resident Medical Officers often being appointed to the infirmary, and in the year 1929 a Local Government Act was passed by which the functions of the Guardians of the Poor were taken over by the county councils. The county council hospitals tended to become "acute" hospitals, admitting patients of all classes of society so long as they were suffering from urgent and rapidly curable diseases. Patients with conditions already chronic, or likely to become so, gained little from the changed ownership of the hospitals. Then came the war of 1939. Many of the late workhouse infirmaries, now known as municipal hospitals, were included in the Emergency Hospital Service, and battle casualties naturally came first in importance, the acute civilian sick came second, while the chronic sick fell

*Principal Medical Officer, Ministry of Health, Whitehall, London, England; Associate Editor, *Geriatrics*.

to third place. As medical and nursing staff became less, the desire to limit the number of admissions of long-stay patients became greater.

During the latter part of the war, an inquiry was made from the Ministry of Health into the condition of patients who had been evacuated from the chronic wards of hospitals in dangerous areas to institutions in safer parts of the country. It was something of a shock to find that while the patients were being fed and cared for to the extent of being kept clean and free from bed sores, little or nothing was being done in the way of active treatment or rehabilitation. The common view seemed to be that the patients were "chronic sick," and no treatment would be of any avail. They must therefore be kept in bed until they died, in five, ten or possibly twenty years' time!

Obviously, it was necessary to do something, but it was not easy to see what could be done. Doctors were graduating every year from the medical schools and were going into practice. They were trained to deal with many diseases which they would rarely see, but they had little or no experience of the treatment of chronic hearts, of hemiplegia, of arthritis, or of other conditions which they would commonly find among their private patients.

There was, however, one change which could be made at once, and that was the proper classification of the chronic patients in the hospitals. In 1943, Dr. Marjory Warren, the Deputy Medical Director of West Middlesex County Hospital, Isleworth, had written an article on the care of the chronic sick in which she urged the proper classification of the chronic sick, and also suggested the need for specialization in geriatrics. The last paragraph of her article read as follows: "It is noteworthy that geriatrics has received more attention in America than in this country, and much of the literature on the subject has emanated from American writers, notably Thewlis."

Dr. A. L. Banks, one of the Medical Officers of the Ministry of Health, published a paper in 1945, entitled "The Care of the Infirm and the Long-stay Patient." He, too, pointed out the urgent need of proper classification, of detailed medical investigation into each case, and he suggested the different types of accommodation required for such patients.

In 1946, two of the Medical Officers of the Ministry of Health addressed the Parliamentary Medical Committee on the care of the chronic sick and of the aged. The committee showed great interest in the subject, and its secretary sent copies of the address to the medical periodicals. The result was perhaps greater than the somewhat elementary account of the subject deserved. A number of interested persons wrote letters and articles to the press, and the work of medical men who were trying to improve the treatment of chronic diseases became known. For example, Dr. E. B. Brooke, the Medical Superintendent of St. Helier's Hospital, Carshalton, Surrey, had instituted, with the assistance of Dr. F. S. Cooksey, the Director of Physical Medicine of King's College Hospital, London, a system of out-

patient treatment for patients who would otherwise have been filling beds in the wards. Dr. L. Cosin, Medical Superintendent of Orsett Lodge Hospital, Grays, Essex, is another who is greatly interested in geriatrics. With the minimum of staff and equipment and in old hospital buildings, he has obtained excellent results in elderly patients with fractured femur, hemiplegia, arthritis and other chronic diseases.

An important occurrence in January, 1947, was the publication of the *Report of a Survey Committee on the Problems of the Aged and the Care of Old People* for the Trustees of the Nuffield Foundation.* Among the many subjects mentioned in this most interesting and exhaustive report is the care of the long-term sick. The committee recommends the provision of an experimental centre "in which the best methods of caring for the following three different categories of aged persons could be sought for and demonstrated:

(1) those who are merely feeble through old age,
(2) those whose sight or hearing is failing to a degree that makes life difficult,
(3) those who are suffering from chronic conditions such as rheumatism or arthritis, partial paralysis or a measure of senility."

The report adds that: "Such a centre would be a place where persons wishing to specialize in the care of the aged could be trained in the best methods."

Curiously, during the time that this committee was sitting, and before its report was published, an informal conference of doctors consisting partly of members of the staff of the Ministry of Health and partly of other interested persons, began to meet to discuss problems in the treatment and care of the chronic sick. They found that at the present time there are about 70,000 beds occupied by chronic sick patients in England and Wales. The majority of these are in institutions where the patients are liable to remain for long periods of time, and often until they die, unclassified and without full appropriate treatment. Because of this, a shortage of beds for the chronic sick has become apparent, and many necessitous patients are denied admission to hospital either because of lack of accommodation or because of shortage of nurses. In some hospitals, however, it has been shown that with suitable medical treatment between 30 per cent and 40 per cent of those patients admitted to chronic sick wards in the course of a year can be improved in health to such an extent that they can be discharged either to their own homes or to suitable hostels, thereby relieving the pressure upon beds and nursing staff, and allowing for the admission of more patients. The Conference noted that several of the London teaching hospitals were considering ways in which they could take their share in the treatment of the chronic sick, and it was suggested that centres should be organized, preferably in connection with teaching hospitals, to ascertain to what extent the diseases

*See *Geriatrics*, May-June, 1947, page 190, for excerpt of this report.

of the chronic sick can be remedied, and what facilities and organization are necessary to achieve this end.

This proposal was brought to the notice of Sir Wilson Jameson, Chief Medical Officer of the Ministry of Health, who, in April, 1947, sent a letter to the Medical Officers of Health of County Councils and of County Borough Councils who are administratively responsible for the municipal hospitals, drawing their attention to most of these points and suggesting that consideration should be given to the possibility of organizing a unit to which so-called chronic sick patients could be admitted for specialist examination and advising that such patients should, in the first instance, be admitted to the wards of a general hospital for preliminary classification by the general hospital staff. It is too soon to say what the results of this circular will be.

It may seem that a great deal has been done in this country to improve the hard lot of the long-term patient, but, in fact, only a beginning has been made. A few workers, stimulated by the writings of pioneers in the United States of America, such as Stieglitz, Bluestone, Eugene Walker and others have experimented in new methods of treatment, and have shown that, with enthusiasm and perseverance, much can be done to return patients to a happy and useful life who would formerly have been doomed to years of a bedfast existence, but until there is a general demand for improvement only the minimum will be done.

Happily, there are signs that public interest is awakening to some extent. The age of the population is increasing in England as it is in the United States, so that it is desirable on economic, as well as on humanitarian grounds to retain, in useful employment, as many as possible of the older men and women, while shortage of hospital beds and of staffs requires that no one shall be filling a hospital bed unnecessarily. The prevention and treatment of crippling long-term illnesses are a means of meeting both these requirements. More and more it is being realized that old people, if they can be kept healthy, have a contribution to make to the community. The National Health Service Act, which comes into force on July 5, 1948, ensures the free provision of spectacles, dentures, hearing aids and other medical appliances, the lack of which so often causes disability in old persons. The prevention, treatment and cure or alleviation of chronic disabling diseases is equally necessary if the Minister of Health is to carry out the duty imposed on him by the Act "to promote the establishment in England and Wales of a comprehensive health service designed to secure improvement in the physical and mental health of the people of England and Wales and the prevention, diagnosis and treatment of illness."

The Survey Committee of the Nuffield Foundation recognize the necessity of occupation as a means of maintaining health among the aged and in their report they state "The Committee have been impressed by the views expressed to them of the high therapeutic value of occupation and employment in delaying the development of the effects of ageing and they feel that

it is in the interests of those who are elderly but not old to be able to continue in employment as long as they wish to do so."

Dr. Trevor Howell makes the same point. He found at the Royal Hospital, Chelsea, the famous institution for Army pensioners founded in the reign of Charles II, that pensioners who could be made to take an interest in something—gardening, bowls, odd jobs about the place or, indeed, anything that engaged their minds—retained their health better than those who did nothing and thought of nothing all day. He also found that by prompt attention to early symptoms of diseases of heart, lungs, muscles or joints, which are so likely to become chronic in the elderly, he was able to postpone, or even to prevent, serious disablement. His results proved that his methods were sound and the number of bedridden patients in the Royal Hospital, even in the sick quarters, is surprisingly small.

It is interesting to contrast this with Dr. Warren's description of the untreated cases in some other institutions, "Having lost all hope of recovery with the knowledge that independence has gone and with a feeling of helplessness and frustration, the patient rapidly loses morale and self-respect and develops an apathetic or peevish, irritable, sullen, morose and aggressive temperament which results in laziness and faulty habits, with or without incontinence. Disinterest in their surroundings, confinement to bed and a tendency to incontinence soon produce pressure sores, with the necessity for more nursing of a kind ill-appreciated by the patient. An increase in weight, especially in the anterior abdominal wall, an inevitable loss of muscle tone, completes the requirements for a completely bedridden and increasingly immobile patient. Soon the well-known disuse atrophy of the lower limbs with postural deformities, stiffness of periarticular tissues and contractures, completes the unhappy picture of human forms who are not only heavy nursing cases in the ward and a drag on society, but are no pleasure to themselves and a source of acute distress to their friends."

The care and treatment of the aged and the chronic sick are not easy. Patience, enthusiasm and knowledge are needed. The full facilities of a general hospital must be available for classification of the patient and correct diagnosis of his condition. When the treatment has been decided, it must be carried out conscientiously and the patient must remain in the hospital until no longer in need of a hospital bed. Every effort should be made to get the patient up as soon as possible and to continue his treatment as an outpatient. At the Orsett Lodge Hospital, Essex, Dr. L. Cosin has a block where the patients who still require a certain amount of hospital care and treatment, but not full ward routine, live as it were in a hostel. Their meals are brought to them and the heavy cleaning is done by workers from other parts of the hospital, but apart from this, the patients dress themselves, make their beds, etc., and can go in and out of the premises at all reasonable hours as they like. The only resident staff in the block is an elderly nurse who acts merely as a kind of warden. There seems a future for provision of this

kind, which spares hospital beds and staff and encourages the patients to be independent. Possibly some kind of annex, not necessarily in the hospital grounds, but under the general supervision of the hospital staff, would be the solution, the desire being to wean the patient from the hospital atmosphere in a sort of half-way house between the hospital ward and his own home.

How best can the treatment of the chronic sick be placed on a sound basis? Some people consider that the whole subject of the care of the aged —and most of the long-term diseases occur among the aged—should become the prerogative of specialists in geriatrics corresponding to those already existing in paediatrics. It is maintained that only by raising the subject to the dignity of a medical specialty will the treatment of the chronic sick be removed from the contempt in which it has been held by doctors and nurses in the past. There will also be a greater likelihood of research into the causes of disease in the aged and into improved methods of treatment, while a better type of medical man will be attracted to the work. The opponents of this view argue that the diagnosis, prevention and treatment of chronic disabling conditions are a part of ordinary medicine, which all students—medical and nursing—should learn and that to make a specialty of it is to lead students to think that it is something beyond what normal medical practitioners need know and something, indeed, about which they need not worry if they feel no urge to become specialists in the subject.

It is well known that no arguments except, perhaps, religious ones, are more bitter than those between doctors. However, in a matter of this kind, the more heat the better. The fiercer the arguments the more notice that will be taken of them and good will result in the way of an increased interest in the subject. Like most matters of controversy, there is something to be said on both sides. As mentioned previously, teaching hospitals are beginning to take an interest in the care of the chronic sick. This will mean that professors and tutors will be required who will be responsible for research and for improvements in methods of treatment. At the same time, students will be taught that the subject is one within the competency of every medical practitioner and they will carry their knowledge of the prevention and treatment of diseases of the aged into the world to the benefit of a group of patients whose neglect in the past has been little short of a scandal.

REFERENCES

Affleck, J. W.: *Lancet*, March, 1947

Amulree, Lord, and Sturdee, E. L.: *Medical Officer* 1946.

Banks, A. L.: *Monthly Bulletin of the Ministry of Health*, June, 1945.

Bluestone, E. M.: *The Modern Hospital*, September, 1944

Haslett: *Nursing Mirror*, March, 1947

Hospital Survey, London, H. M. Stationery Office, 1946.

Howell, Trevor: *Old Age*, H. K. Lewis & Co., 1944.

Simon, Sir John, *English Sanitary Institutions*. Second Edition, John Murray, London, 1897.

National Health Service Act, 1946, H. M. Stationery Office, London.

NUFFIELD FOUNDATION: *Old People*, Oxford University Press, London, 1947.
PAGE, WALTER: *Letters*, Heinemann, London, 1928.
STURDEE, E. L. *The Pharmaceutical Journal*, February, 1947
WARREN, M.: *British Medical Journal*, December 25, 1943.
WARREN, M.: *Lancet*, London, June 8, 1946.

TEN CHIEF CAUSES OF DEATH BY AGE GROUPS (Wisconsin)*

Average for Two Periods, 1934-1936 and 1944-1946

Resident Data—Rates Per 100,000 Population

45 TO 64 YEARS

1934-1936 3 Year Average	*No.*	*Rate*	*1944-1946 3 Year Average*	*No.*	*Rate*
All Causes	7,689		All Causes	8,349	
Heart Disease	1,840	337.4	Heart Disease	2,776	434.6
Cancer	1,440	264.1	Cancer	1,719	269.1
Cerebral Hemorrhage	642	117.7	Cerebral Hemorrhage	769	120.4
Accidents	539	98.8	Nephritis	428	67.0
Nephritis	518	95.0	Accidents	407	63.7
Pneumonia	407	74.6	Diabetes	326	51.0
Tuberculosis	313	57.4	Tuberculosis	273	42.7
Diabetes	253	46.4	Pneumonia	229	35.8
Suicide	193	35.4	Suicide	183	28.6
Cirrhosis of Liver	124	22.7	Cirrhosis of Liver	146	22.8

65 YEARS AND OVER

1934-1936 3 Year Average	*No.*	*Rate*	*1944-1946 3 Year Average*	*No.*	*Rate*
All Causes	15,418		All Causes	17,668	
Heart Disease	5,326	2689.7	Heart Disease	6,888	2889.4
Cancer	2,022	1021.1	Cancer	2,477	1039.1
Cerebral Hemorrhage	1,995	1007.5	Cerebral Hemorrhage	2,325	975.3
Nephritis	1,341	677.2	Nephritis	1,178	494.1
Pneumonia	795	401.5	Accidents	828	347.3
Accidents	632	319.2	Diabetes	587	246.2
Diabetes	458	231.3	Pneumonia	560	234.9
Senility	283	142.9	Senility	301	126.3
Diseases of Prostate	209	105.5	Diseases of Prostate	208	87.2
Influenza	156	78.8	Influenza	127	53.3

Several diseases of public health interest have registered some improvement in mortality among older people. Pneumonia and influenza moved down both as to rate and rank order. The tuberculosis rate, showing less decline between the ages of forty-five and sixty-four than in any period of life, continues to hold seventh place among the ten leading causes. Diabetes, on the upgrade both in rate and relative importance, is one of those causes toward which our effort should be directed if we are to continue effectively our preventive work.

*From *Wisconsin State Board of Health Bulletin*, July-September, 1947.

NON-PROFIT INSTITUTIONS SERVING THE AGED IN PHILADELPHIA*

Walter R. Harrison

For purposes of this study, an aged person is considered as one who is 65 years of age or over. This is done because almost all institutions caring for the aged will not receive the application of anyone less than 65.

THE HOMES

The Homes for the care of the aged in Philadelphia were chosen for study because of the author's familiarity with the field and his personal contacts by way of the Council of Social Agencies in Philadelphia with many individuals in positions of responsibility in their respective Homes.

There are 52 Homes for the Aged in the immediate limits of the city. Nineteen additional Homes are located in the suburbs. These were not included in the study. Interest and enthusiasm for the care of the aged is on the increase.

THE METHOD

The questionnaire was chosen as the method for securing the information. It contained altogether 45 questions, some with as many as 6 subquestions. The questions were grouped under four headings—Security, Recognition, Response, and Recreation. Of the 52 questionnaires sent, 21 were returned, all save one almost fully answered.

THE RESULTS

From the questionnaire it was learned that by far the largest number of Homes depend upon individual contributions, endowments and payments by their guests (residents) for income. Three Homes indicated they received support from tax funds; five that the Church added to their income; and one each noted the following sources: fraternal, Community Fund, and "Sisters go collecting."

Of the thirteen Homes which stated they received support by way of their residents' payments eight indicated they admitted residents on a boarding basis. The board rates range from thirty-four to eighty-five dollars a month.

The entire group reported admissions on a contract basis. In some instances the admission fee varied depending largely upon the circumstances

---

*Summary of a survey undertaken by the author in 1946 in connection with his work at the University of Pennsylvania in the field of sociology.

Superintendent, Lutheran Home for Orphans and Aged, Philadelphia; Chairman, Committee on Standards of the Division for the Aged of the Philadelphia Council of Social Agencies

of the applicant (health and amount of assets). One Home had no admission fee, another required all the applicant's assets. Set admission fees varied from one hundred to twenty thousand dollars, with the average between one thousand and fifteen hundred dollars.

From this we can reason that admission policies are not static, varying with the circumstances of both the Home and the applicant. Whereas, some years ago persons were admitted only on a contract basis, today more Homes are admitting them on a boarding basis, with the idea that when assets are consumed the resident will apply for Old Age Assistance grant. Homes for the aged are thereby given a stronger economic foundation making it possible for them better to care for their residents.

Of the 21 Homes responding, 10 admit both men and women, 9 only women and 2 men only. Women predominate in the Homes by a ratio of almost 2 to 1. If we do not consider a certain seaman's Home, which has a total male population of 271, the ratio would be about one male resident to every four females, which is nearer the true picture. The ratio of male to female in individual Homes varies from 1 to 2 up to 1 to 15, with 1 to 7 as the average.

The capacity of the 21 Homes is as low as 6 and as high as 271. Six Homes have more than 100 residents; 5 have less than 25. All of them are filled to capacity, some with long waiting lists.

Our questionnaire reveals that the Homes for the aged in Philadelphia are evenly divided regarding the admission of couples. Eleven answered in the affirmative and ten in the negative the question, "Do you admit married couples?" Of this latter group some are limited by their charter or by provisions of the will under which they were originally incorporated. Of the former, visits to a number of the Homes during the past five years and comments in committee meetings reveal that aged couples are seldom separated except when one of them becomes grievously ill and needs hospitalization. This practice is no different from that of the primary family unit.

For obvious reasons practical nurses predominate on the staffs of the Homes. Totals are as follows: 14 registered; 11 graduate and 36 practical nurses. Two Homes reported no nurses whatsoever on their staffs. One of these has six, the other seven residents. Four Homes have only practical nurses; four have practical and graduate nurses; one has registered and graduate nurses; four have registered and practical nurses; none have just graduate nurses; one has all three types and two just registered nurses. One Home, in addition to a graduate nurse and a practical nurse listed a nurse's aid.

Two Homes reported a physician in residence; eighteen, that he is on call. One did not answer. Twelve replied that he conducted a regular clinic averaging between two and three times a week. The highest was seven times weekly. Seven Homes reported that, while the physician was on call, there was no stated weekly clinic. One Home noted that "Guests have their own

physician. The chairman of the Health Committee (a physician) can be called in an emergency."

Hospital facilities are available to all the Homes save one, and they are used. Two Homes reported infirmaries on their own premises, one with 12 and the other with 15 beds.

We asked the question concerning routine occupational duties. Fifteen Homes listed seventeen different duties, answering that residents did participate; seven with the approval of the physician and eight without such approval. Fourteen reported such participation was by choice of the resident. Among that number, six also said it was by necessity of the Home. One Home indicated it does not leave such participation to the discretion of the resident but expects it as a condition of entrance. Many of the duties listed are very light. Five Homes do not ask their residents to perform any routine occupational duties.

Five Homes reported an occupational therapy program which in general consisted of handicraft, hobby shop, pool table, arts and craft instruction, sewing, knitting and crocheting. One Home said such activity was allowed as recommended by the physician. Sixteen Homes responded in the negative.

Eleven Homes reported a total of 28 residents confined to bed, or an average of almost three per Home. Ten reported a total of 42 confined to their bedroom, an average of 4 per Home. Eleven indicated 152 confined to the building, an average of 15 per Home. This question was asked to determine the extent to which the Homes in Philadelphia are called upon to care for the chronically ill aged person whose proportion in the population is on the increase.

SUMMARY

Homes for the aged in Philadelphia are providing good physical care for their residents. An aged person, entering one of the various Homes need have no fear regarding physical security. Further improvements can be made in this direction.

For the rest of the four wishes—response, recognition and recreation—these Homes are still in the toddler's stage. For the many, the old custodial attitude toward the resident prevails. In this direction we must rethink our concept of the aged. Those who operate the Homes must realize that older people are characters and personalities, a bit more definite, but often more stable and mellowed by life.

Program of the Second Meeting of the American Society for the Study of Arteriosclerosis Hotel Knickerbocker, Chicago, Ill. November 2 and 3, 1947

SUNDAY, NOVEMBER 2, 1947

Session I.

Anatomic Considerations in the Study of Arteriosclerosis

Chairman: W. C. Hueper, New York

9:00 A.M. Remarks by W. B. Kountz, St. Louis, Chairman of the Program Committee.

9:05 A.M. 1. Cellular Pathology of Endothelium. R. Altschul, Saskatchewan, Canada.

9:20 A.M. 2. The Pathogenic Pattern of Arterial Hypertension. W. Raab, Burlington, Vt.

9:35 A.M. 3. Vascularization of the Aorta in Different Species in Health and Disease. J. G. Schlichter, Chicago.

9:55 A.M. 4. Experimental Coronary Arteriosclerosis in Cockerels. J. C. Paterson, S. J. Slinger (by invitation), and K. G. Gartley (by invitation), London, Ontario.

10:15 A.M. 5. Cerebral Vascular Changes in Arterial Hypertension. I. M. Scheinker, Cincinnati.

10:40 A.M. Round Table. L. N. Katz, Moderator; N. S. Davis, J. C. Paterson, F. Pearl, C. Woerner.

11:20 A.M. General Discussion, led by F. W. Dunihue, Burlington, Vt.

12:00 Noon. Summary. W. C. Hueper.

12:15-1:15 P.M. Recess.

Session II.

Physiologic Considerations in the Study of Arteriosclerosis

Chairman: I. H. Page, Cleveland

2:00 P.M. 6. Renal Vascular and Diotrast Clearance Changes with Age. D. F. Davies, Baltimore.

2:10 P.M. 7. Reduced Nutrition of the Vessel Walls as Result of Intravascular Agglutination. M. H. Knisely (by invitation), Chicago.

2:25 P.M. 8. Changes in Coagulability of the Blood in Arteriosclerosis Obliterans of the Extremities. N. Barker, Rochester, Minn.

2:40 P.M. 9. Effect of Arteriosclerosis on Dynamics of Hypertension in the Aged. F. D. Zeman and B. Schwartz (by invitation), New York.

3:00 P.M. 10. Is Atherosclerosis with Thrombosis an Industrial Disease? N. S. Davis, Chicago.

3:25 P.M. Round Table. A. C. Corcoran, Moderator; M. Bruger, J. P. Holt, R. A. Katz, M. Protas.

4:05 P.M. General Discussion, led by L. N. Katz, Chicago.

4:45 P.M. Summary. I. H. Page.

5:00-7:30 P.M. Recess.

7:30 P.M. Banquet. W. C. Hueper, presiding. **Master of Ceremonies:** W. B. Kountz. R. A. Katz: **Arteriosclerosis in Europe, A Report. After Dinner Speaker:** Professor Hans Selye, Montreal, **Hormonal Factors in Hypertension.**

MONDAY, NOVEMBER 3, 1947

Session III.

Metabolic Considerations in the Study of Arteriosclerosis

Chairman: O. J. Pollak, Wilmington, Del.

9:00 A.M. 11. Studies on Fat Depositing Mechanism. H. S. Simms, New York.

9:20 A.M. 12. Diabetes and Arteriosclerosis in Youth. H. F. Root, Boston.

9:40 A.M. 13. The Effect of Choline, Lipocaic, Inositol and Betains on Cholesterol Atherosclerosis in the Rabbit. G. O. Broun, K. R. Andrews (by invitation), and P. J. V. Corcoran (by invitation), St. Louis.

9:50 A.M. 14. The Role of the Thyroid in Experimental Atherosclerosis in the Chick. L. Horlick (by invitation), L. N. Katz and D. Dauber, Chicago.

10:10 A.M. 15. General Oxidative Processes with Relation to Degenerative Changes in the Body. M. Chieffi (by invitation) and W. B. Kountz, St. Louis.

10:30 A.M. Round Table. H. S. Simms, Moderator; N. Barker, L. Morrison, J. B. Stubbs, J. B. Wolffe.

11:10 A.M. General Discussion, led by I. H. Page, Cleveland.

11:50 A.M. Summary. O. J. Pollak.

12:05-1:15 P.M. Recess.

Session IV.

Therapeutic Considerations in the Study of Arteriosclerosis

Chairman: J. B. Wolffe, Philadelphia

2:00 P.M. 16. A Study of Renal Biopsies in Relation to Preoperative Observation and Postoperative Results of Sympathectomy. H. Barker, H. Lindberg (by invitation) and W. Wartman (by invitation), Chicago.

2:20 P.M. 17. Lumbar Sympathectomy in Arteriosclerotic Gangrene of Lower Extremity. L. Gerber, W. McCune (by invitation) and W. Eastman (by invitation), Washington, D. C.

2:35 P.M. 18. Dissecting Aortic Aneurysm, Pathogenesis and Surgical Significance. A. M. Blain, III, Ann Arbor.

2:45 P.M. 19. Intravenous Ether—A New Approach to the Therapy of Arteriosclerosis. R. A. Katz, New Orleans.

3:00 P.M. Round Table. A. S. Hyman, Moderator; N. S. Davis, R. Holman, F. Pearl, A. S. Saidman.

3:40 P.M. General Discussion, led by N. Barker, Rochester, Minn.

4:20 P.M. Summary. J. B. Wolffe.

4:30 P.M. 20. Continuous Intravenous Injection in Small Animal. C. A. Woerner, New York.

4:45 P.M. Adjournment.

GERIATRICS

Official Journal of the American Geriatrics Society

OFFICERS OF THE AMERICAN GERIATRICS SOCIETY

WALTER E. VEST, M.D., *President*
EDWARD B. ALLEN, M.D., *First Vice President*
HOLLIS E. CLOW, M.D., *Second Vice President*
MALFORD W. THEWLIS, M.D., *Secretary*
RICHARD J. KRAEMER, M.D., *Treasurer*

Correspondence pertaining to the American Geriatrics Society should be addressed to Dr. Malford W. Thewlis, Secretary, 25 Mechanic Street, Wakefield, Rhode Island.

THE MEDICAL CARE OF OLD PEOPLE

RECENTLY there has been much discussion about the organization and administration of care for the aged and infirm. On the whole, the lay public is more interested in this subject than the medical profession and has shown itself to be more advanced in its views and actions than the doctors. What is now most urgently needed is an improvement in the standards of medical practice among elderly patients. Only a little is known about the differences between old age and earlier life, either in health or in disease. That little is known only to a small number of doctors. It is high time that geriatrics emerged from the dark ages into the light of modern scientific progress.

There are two or three important points which must always be remembered when one is treating elderly patients. The first of these is the difference in the time factor. For old people, prompt treatment is absolutely essential to proper recovery. The aged have but few reserves and a few hours often makes a great difference to them. For example, when the sulphonamides were first introduced for the treatment of pneumonia, I always waited for the development of physical signs in the lungs before administering the drug. Many of my patients used to develop secondary cardiac failure. Later, when I introduced the drug earlier, this complication became less and less

frequent. On the other hand, in chronic disease, it may be months before the old person shows signs of responding to treatment. Only patience and persistence will produce results. I can recall a chronic arthritic who began to improve only after six months of continuous therapy.

The second point which I should like to stress is the natural tendency of the aged to stagnation and atrophy in body and mind. If such patients are allowed to stay in bed without movement or occupation, they will degenerate, develop contractures, get bed-sores and literally rot to death. These old folk must be encouraged to get up, dress themselves, walk about and find something to do. This is the reason why physiotherapy and occupational therapy is so essential in hospitals for the aged. After all, the reason why people live to be old is that they are made of tough material. If their diseases are treated with energy, skill and promptitude, they often surprise everyone by the way in which they recover.

The diseases of the elderly can be divided into three types: those which are curable; those which are treatable; those which are, at present, untreatable. The first group includes, among others, most of the urinary and pulmonary infections which are such a common cause of death when neglected. The second comprises many chronic diseases, such as chronic bronchitis, chronic arthritis, many cases of hemiplegia and hypertensive heart disease, for instance. In all these it is possible to improve the condition of the patient considerably if the proper methods are applied. The third numbers later stages of malignant new growths and senile dementia among its representatives, in our present state of knowledge.

Now, in my opinion, the recovery rate among elderly patients depends directly upon the skill and interest of the doctor. When studying the figures of diseases and deaths among the Chelsea Pensioners, I remarked that each successive new medical officer at the hospital in his first year tended to admit fewer old men to the infirmary than his predecessor had done. This low admission rate was usually accompanied by a higher death rate than normal. Conversely, many admissions were associated with fewer deaths. I found that this was true of my own period as medical officer at the hospital also. At Chelsea the death rate varied from 40 per cent to 15 per cent of the admissions to the infirmary each year. While the picked nature of the population of the Royal Hospital makes this an optimum, not an average representative result, it does give a target at which other institutions and hospitals can aim.

One of the causes of the low state of efficiency in the care of old people is that we know so little about the pathology or physiology of advancing years. It is vaguely recognized that a tendency to multiple disease process exists. This may be underlined by the fact that in 100 successive post-mortem examinations on old people, my pathologist, Dr. Piggott, found 186 separate morbid lesions. Forty-four of these were in the cardiovascular system, 41 in the respiratory system, 29 in the genito-urinary system and 26 in the

digestive tract. There were no less than 29 new growths present. In the same way, we are handicapped by a lack of knowledge about what is customary and normal among the changes of old age. If I may quote some of my own investigations, we find that the body temperature of the elderly is often below 98.4 degreees, and sometimes as low as 95, even after a five-minute reading. The blood pressure is raised above a systolic figure of 160 mm. in about 75 per cent of healthy old men. Many of the tendon reflexes are not present and some dysmetria and loss of vibration sense is quite common on neurological examination. The specific gravity of the urine tends to be low with increasing years, but the level of blood urea is not raised above 50 mgm. per cent unless there is serious renal disease. These few facts demonstrate how great is the need for research into gerontology if our clinical methods are going to improve.

At present, the old people do not get efficient medical care and attention. It is thought that anyone is good enough for the aged and chronic sick. I have tried to show that only the best doctors are good enough to work in this field of medicine. As for myself, I have worked in several branches, including both tropical medicine and general practice. But to my mind, the most demanding and fascinating of all is geriatrics.

Trevor H. Howell, M. R. C. P., Ed.
Purley, Surrey, England

RESEARCH IN GERIATRICS

The New York University College of Medicine and Memorial Hospital for the Treatment of Cancer and Allied Diseases, Welfare Island, began a project in research of old age diseases in September. The program is carried out at the hospital by a staff of university research specialists under the supervision of Dr. J. Murray Steele, associate professor at the College of Medicine and director of the university's Third Medical Division at the hospital. Patients will be available for research over ten to fifteen years, which will make possible a continuous study of old age diseases as they affect the individual. The project calls for the study of a maximum of 10 patients at one time.

CORRECTION

In the September-October issue, page 304, under the heading State Associations Honoring Fifty-Year Members, instead of Missouri it should be Mississippi, and Dr. Evans resides in Aberdeen, Mississippi, not Missouri.

GERIATRICS

Official Journal of the American Geriatrics Society

INDEX TO VOLUME II

JANUARY-DECEMBER 1947

JANUARY-FEBRUARY 1947

NUMBER 1

Many Factors May Influence Senescence, by NATHAN S. DAVIS, M.D., F.A.C.P., 5

Some Clinical Aspects of Intraoral Age Changes, by HAMILTON B. G. ROBINSON, D.D.S., M.S., 9

Surgery of the Prostate Gland, by OSWALD S. LOWSLEY, M.D., F.A.C.S., and ALBERTO GENTILE, M.D., 13

Uterine Bleeding: Menopausal and Postmenopausal, by BERNARD L. CINBERG, M.D., 17

Vitamin D Therapy in the Treatment of Scleroderma and Allied Conditions: Three Cases, by C. FREDERICK NORMAN, M.D., F.A.C.S., 24

The Wechsler-Bellevue Scale in Individuals Past Sixty, by M. J. MADONICK, M.D., and MARIAN SOLOMON, M.S., 34

The Basic Factors of Nutrition in Old Age, by JOSEPH T. FREEMAN, M.D., 41

MARCH-APRIL 1947

NUMBER 2

On Precursors of Gastric Carcinoma, by RUDOLF SCHINDLER, M.D., 75

Anaesthesia in the Aged, by E. H. WATTS, M.D., 88

The Effect of Age on the Leukocyte Count, by WILLIAM R. GABBERT, M.D., LUCILE W. HUTAFF, M.D., and GEORGE T. HARRELL, M.D., 96

Nutritional Aspects of Aging, by HENRY A. RAFSKY, M.D., F.A.C.P., and BERNARD NEWMAN, CH.E., M.S., 101

Cutaneous Hypersensitivity Reactions to Penicillin in the Aged, by JOSEPH FARRINGTON, M.D., 105

Physical Fitness and Work Capacity of Older Men, by ERNST SIMONSON, M.D., 110

MAY-JUNE 1947

NUMBER 3

Acute Myocardial Infarction, by MARK D. ALTSCHULE, M.D., 137

Diet for the Aged, by JACOB MEYER, M.D., 149

Clinical Differentiation of Senile and Arteriosclerotic Psychoses, by DAVID ROTHSCHILD, M.D., 155

Future of the Older Worker, by THEODORE KLUMPP, M.D., 165

Nitrogen Balance Studies in Elderly People, by WILLIAM B. KOUNTZ, M.D., LILLI HOFSTATTER, and PHILIP ACKERMANN, Ph.D., 173

Counselling the Aged, by CLARE DEGRUCHY, 183

JULY-AUGUST 1947

NUMBER 4

Significant Objectives in the Management of Cardiac Failure in Elderly Patients, by HOWARD M. ODEL, M.D., 197

Preclinical Medicine and Geriatrics, by MALFORD W. THEWLIS, M.D., and E. T. GALE, M.D., 205

Nutrition in Cardio-Vascular Disease, by DON CARLOS PEETE, M.D., 213

Geriatrics Contacts Old Age Assistance, by EDWARD L. TUOHY, M.D., 222

Epilepsy in Old Age, by MADELAINE R. BROWN, M.D., 230

Cancer in the Aged, (Anonymous), 233

Allergy Problems in Elderly Patients, by ABNER M. FUCHS, M.D., 235

SEPTEMBER-OCTOBER 1947

NUMBER 5

Old Age: A Public Health Problem, by WINGATE M. JOHNSON, M.D., 261

Functional Psychoses in the Aging Simulating Organic Syndromes, by EDWARD B. ALLEN, M.D., 269

The Training of A Geriatric Physician, by TREVOR H. HOWELL, M.R.C.P., Ed., 280

Surgical Treatment of the Aged Arthritic, by OTTO C. KESTLER, M.D., 283

Nursing the Geriatric Patient, by ELIZABETH W. HARD, R.N., 287

The American Society for the Study of Arteriosclerosis, by O. J. POLLAK, M.D., Ph.D., 291

Experimental Approaches to the Problem of Arteriosclerosis, by W. C. HUEPER, M.D., 293

Arteriosclerosis at Present—A Melting Pot of Arteriopathies, by JOSEPH B. WOLFFE, M.D., 296

NOVEMBER-DECEMBER 1947

NUMBER 6

Endocrine Problems After the Age of Forty-Five, by WILLARD O. THOMPSON, M.D., 325

The Chemotherapy of Urinary Tract Infections in the Elderly, by WILLIAM L. HEWITT, M.D., 334

General Oxidative Processes with Relation to Degenerative Changes in the Body, by WILLIAM B. KOUNTZ, M.D., and MARGARET CHIEFFI, M.D., 344

Care of the Aged and Chronic Sick in Great Britain, by E. L. STURDEE, M.D., M.R.C.P., 359

Non-Profit Institutions Serving the Aged in Philadelphia, by WALTER R. HARRISON, 366

INDEX OF AUTHORS

ACKERMANN, PHILIP (co-author), Nitrogen Balance Studies in Elderly People, 173

ALLEN, EDWARD B., Functional Psychoses in the Aging Simulating Organic Syndromes, 269

ALTSCHULE, MARK D., Acute Myocardial Infarction, 137

BROWN, MADELAINE R., Epilepsy in Old Age, 230

CHIEFFI, MARGARET (joint author), General Oxidative Processes with Relation to Degenerative Changes in the Body, 344

CINBERG, BERNARD L., Uterine Bleeding: Menopausal and Postmenopausal, 17

DAVIS, NATHAN SMITH, Many Factors May Influence Senescence, 5

DEGRUCHY, CLARE, Counselling the Aged, 183

FARRINGTON, JOSEPH, Cutaneous Hypersensitivity Reactions to Penicillin in the Aged, 105

FREEMAN, JOSEPH T., The Basic Factors of Nutrition in Old Age, 41

FUCHS, ABNER M., Allergy Problems in Elderly Patients, 235

GABBERT, WILLIAM R. (co-author), The Effect of Age on the Leukocyte Count, 96

GALE, E. T. (joint author), Preclinical Medicine and Geriatrics, 205

GENTILE, ALBERTO (joint author), Surgery of the Prostate Gland, 13

HARRISON, WALTER R., Non-Profit Institutions Serving the Aged in Philadelphia, 366

HEWITT, WILLIAM L., The Chemotherapy of Urinary Tract Infections in the Elderly, 334

HOFSTATTER, LILLI (co-author), Nitrogen Balance Studies in Elderly People, 173

HARD, ELIZABETH W., Nursing the Geriatric Patient, 287

HARRELL, GEORGE T. (co-author), The Effect of Age on the Leukocyte Count, 96

HEDBACK, A. E., Fear of Death (editorial), 120; Geriatrics Begins at Twenty (editorial), 247; Reverse English (editorial), 301

HERRMANN, GEORGE R., Hypercholesterolemia and Atheromatous Disease in Premature Aging (editorial), 123

HOWELL, TREVOR H., Training of a Geriatric Physician, 280; Medical Care of Old People (editorial), 369

HUEPER, W. C., Experimental Approaches to the Problem of Arteriosclerosis, 293

HUTAFF, LUCILE W. (co-author), The Effect of Age on the Leukocyte Count, 96

JOHNSON, WINGATE M., Old Age: A Public Health Problem, 261

KENNEDY, FOSTER, The Menopause (editorial), 51

KESTLER, OTTO C., Surgical Treatment of the Aged Arthritic, 283

KLUMPP, THEODORE, Future of the Older Worker, 165

KOUNTZ, WILLIAM B. (co-author), Nitrogen Balance Studies in Elderly People, 173; (joint author), General Oxidative Processes with Relation to Degenerative Changes in the Body, 344

LOWSLEY, OSWALD S. (joint author), Surgery of the Prostate Gland, 13

MADONICK, M. J. (joint author), The Wechsler-Bellevue Scale in Individuals Past Sixty, 34

MEYER, JACOB, Diet for the Aged, 149

NEWMAN, BERNARD (joint author), Nutritional Aspects of Aging, 101

NORMAN, C. FREDERICK, Vitamin D Therapy in the Treatment of Scleroderma and Allied Conditions: Three Cases, 24

ODEL, HOWARD M., Significant Objectives in the Management of Cardiac Failure in Elderly Patients, 197

PEETE, DON CARLOS, Nutrition in Cardio-Vascular Disease, 213

POLLAK, O. J., The American Society for the Study of Arteriosclerosis, 291

RAFSKY, HENRY A. (joint author), Nutritional Aspects of Aging, 101

ROBINSON, HAMILTON B. G., Some Clinical Aspects of Intraoral Age Changes, 9

ROTHSCHILD, DAVID, Clinical Differentiation of Senile and Arteriosclerotic Psychoses, 155

SOLOMON, MARIAN (joint author), The Wechsler-Bellevue Scale in Individuals Past Sixty, 34

SCHINDLER, RUDOLPH, On Precursors of Gastric Carcinoma, 75

SIMONSON, ERNST, Physical Fitness and Work Capacity of Older Men, 110

STURDEE, E. L., Care of the Aged and Chronic Sick in Great Britain, 359

THEWLIS, MALFORD W., Preclinical Medicine and Geriatrics (editorial), 121; (joint author), Preclinical Medicine and Geriatrics, 205

THOMPSON, WILLARD O., Endocrine Problems After the Age of Forty-Five, 325

TUOHY, EDWARD L., Geriatrics Contacts Old Age Assistance, 222

WATTS, E. H., Anaesthesia in the Aged, 88

WOLFFE, JOSEPH B., Arteriosclerosis at Present—A Melting Pot of Arteriopathies, 296

SUBJECT INDEX

Acute myocardial infarction, 137

Allergy problems in elderly patients, 235

American Society for the Study of Arteriosclerosis, the, 291

Anaesthesia in the Aged, 88

Arteriosclerosis, 291-96

Arteriosclerosis, The American Society for the Study of, 291

Arthritic, surgical treatment of the aged, 283

Cancer in the Aged, 233

Cardiac failure in elderly patients, significant objectives in the management of, 197

Cardio-vascular disease, nutrition in, 213

Chemotherapy of urinary tract infections in the elderly, the, 334

Counselling the aged, 183

Cutaneous hypersensitivity reactions to penicillin in the aged, 105

Diet for the aged, 149

Endocrine problems after the age of forty-five, 325

Epilepsy in old age, 230

Fifty-year men, 303

Gastric carcinoma, on precursors of, 75

Geriatric physician, training of a, 280

Great Britain, Care of the aged and chronic sick in, 359

Institutions serving the aged in Philadelphia, non-profit, 366

Intraoral age changes, some clinical, 9

Leukocyte count, the effect of age on the, 96

Nitrogen balance studies in elderly people, 173

Nursing the geriatric patient, 287

Nutrition in old age, the basic factors of, 41

Nutrition in cardio-vascular disease, 213

Nutritional aspects of aging, 101

Old age: a public health problem, 261

Old Age Assistance, geriatrics contacts, 222

Older worker, future of the, 165

Oxidative processes with relation to degenerative changes in the body, general, 344

Penicillin in the aged, cutaneous hypersensitivity reactions to, 105

Physical fitness and work capacity of older men, 110

Preclinical medicine and geriatrics, 205

Prostate gland, surgery of, 13

Psychoses in the aging simulating organic syndromes, functional, 269

Psychoses, clinical differentiation of senile and arteriosclerotic, 155

Scleroderma and allied conditions, vitamin D therapy in the treatment of, 24

Senescence, many factors may influence, 5

Urinary tract infections in the elderly, chemotherapy of, 334

Uterine bleeding: menopausal and postmenopausal, 17

Wechsler-Bellevue scale in individuals past sixty, 34

INDEX OF EDITORIALS

Fear of Death, A. E. Hedback, 120

Geriatrics Begins at Twenty, A. E. Hedback, 247

Honoring the Fifty-Year Men in Medicine (reprint), Harold M. Camp, 302

Hypercholesterolemia and Atheromatous Disease in Premature Aging, George R. Herrmann, 123

Medical Care of Old People, Trevor H. Howell, 370

Menopause, the, Foster Kennedy, 51

New Year, the, A. E. Hedback, 50

Preclinical Medicine and Geriatrics, Malford W. Thewlis, 121

Reverse English, A. E. Hedback, 301

Years as a Disability (reprint), James M. Phalen, 122

INDEX OF ABSTRACTS

Adrenal Apoplexy Associated with Hypertension, R. L. MacMillan, 250

Aging of Tissues: The Necessity for Research, W. deB. MacNider, 127

Anesthesia In Geriatric Practice, R. A. Hingson, 57

Basic Principles in Geriatric Surgery, L. Carp, 58

Brief Survey of Prostatic Surgery, C. D. Creevy, 132

Carcinoma of the Prostate Gland and Benefits of Diethylstilbestrol of Orchiectomy, C. A. Wattenberg, 65

Carcinoma of the Prostate Gland: Report of a Patient Treated with Orchiectomy and Estrogens, M. D. Shepp, G. J. Beck, and I. Bayer, 258

Carcinoma of Prostate Treated with Oestrogens, J. D. Fergusson, 324

Care of the Chronic Sick and the Aged, Lord Amulree and E. L. Sturdee, 55

Care of the Elderly, Lord Amulree, 192

Chronic Sick in Hospital; a Psychiatric Approach, J. W. Affleck, 256

Circulation and the Surgical Physiology of the Sympathetic Nervous System in Relation to Hypertension, R. Goetz, 316

Clinical Diagnosis of Coronary Artery Sclerosis, A. S. Ferguson, 66

Coronary Occlusion and Myocardial Infarction, L. E. Field, 56

Carcinoma of the Prostate, F. H. Colby, 131

Carcinoma of the Prostate: A Resumé of Treatment with Ethinyl Estradiol; Preliminary Report, L. E. McCrea, 252

Endocrinology in the Aged, H. Benjamin, 8

Estrogens in Cancer, E. C. Dodds, 134

False Presensile Delirium, M. Letailleur, 55

Further Observations on the Prognosis in Angina Pectoris due to Coronary Sclerosis; a Study of 405 Patients who Survived Ten or More Years, G. E. Montgomery, Jr., T. J. Dry, and R. P. Gage, 312

Gastragogue Effects of Laxatives and Allyl-Bromide Mixture, H. Feinblatt and E. Ferguson, Jr., 250

Gerontology and the Eye, C. W. Rutherford, 56

Growing Problem of Old Age Psychoses, N. A. Johnson, 58

Heart Block, R. B. Wood, 254

Hepatic Cirrhosis, Atheromatosis, and Experimental Renal Sclerosis in Relation to Various Dietetic Factors; Continuation, J. Froimovich, 64

Hospitals Can Help the Aged, J. R. McGibony, 57

Hypertension and Calcium Intake, J. Harris, 193

Hypertension and the Surgeon, L. McGregor, 315

Hypertension in Ruptured Kidney, D. C. Corry, 63

Hypertension: Results of Splanchnicectomy in Patients with Abnormal Pyelograms, R. M. Nesbit and R. T. Plumb, 194

Hypertension: Some Uses and Abuses of the Thiocyanates, M. H. Barker, 193

Hypertensive Arteriosclerosis with Retinal Changes, E. H. Stokes, 68

Indications for Transurethral Resection, R. V. Zalazar, 59

Influence of Age on Blood Pressure. A Study of 5,331 White Male Subjects, H. J. Russek, M. M. Rath, B. L. Zohman, and I. Miller, 128

Leanness in the Aged, Schachter, 54

Management of Rheumatic Disease in the Elderly, T. H. Howell, 320

Mechanism of the Fall in Arterial Pressure Produced by High Spinal Anesthesia in Patients with Essential Hypertension, W. C. Levin, G. T. Ross, R. Echols, and R. Gregory, 63

Medical Management of Hypertension, W. B. Troutman, 194

Nutritional Role of Cholesterol in Human Coronary Arteriosclerosis, C. F. Shaffer, 256

Outline of the Present Status of Carcinoma of the Prostate, W. C. Quinby, 65

Pathogenesis and Treatment of Essential Hypertension, R. C. Blount, 314

Pathology of the Mitral Valve in the Older Age Groups, J. Rosenthal and I. Feigin, 311

Peripheral Blood Flow under Basal Conditions in Older Male Subjects with Normal and Elevated Blood Pressures, H. J. Stewart, W. F. Evans and H. S. Haskell, 62

Physiopathology in a Case of Retinal Angiosclerosis, M. Brodsky, 65

Pneumonia in the Aged, F. D. Zeman and K. Wallach, 59

Present Aspect of the Problem of Cancer of the Prostate, S. Kaiser, 60

Present Picture in Chemotherapy in Prostatic Carcinoma, W. P. Herbst, 318

Problem of the Aged in Northern Ireland, E. Hickey, 251

Relationship of Gastric Acidity to Thiamine Excretion in the Aged, H. Rafsky, B. Newman and N. Jolliffe, 251

Remarks on the Treatment of Essential Hypertension, S. M. White, 8

Research on Ageing, Organization of, 190

Rotating Resector: A Modification of the Stern McCarthy Instrument, W. W. Scott and J. B. Brady, 254

Slowly Progressive Occlusive Thrombosis of the Abdominal Portion of the Aorta, R. Strauss, R. Merliss and R. Dominguez, 68

Social and Medical Amenities for the Aged, W. Barr, 130

Study of Mitral Stenosis in Patients who Survived the Age of Fifty, L. A. Baker and D. Musgrave, 313

Surgical Problems in the Aged, J. M. Dorris, 60

Surgical Treatment of Acute Cholecystitis in the Aged, S. J. Carnazzo, 192

Surgical Treatment of Hypertension, E. G. Grantham, 260

Surgical Treatment of Prostatic Obstruction, R. M. Nesbitt, 61

Sympathectomy in Peripheral Vascular Disease and Hypertension, H. C. Voris, 314

Sympathectomy for Peripheral Vascular Sclerosis, G. de Takats and M. H. Evoy, 312

Thoracoplasty for Pulmonary Tuberculosis; Observations on 32 Patients in the Older Age Group, P. E. Zuelke, W. E. Adams and R. G. Block, 196

Trigeminal Neuralgia: Its Relief in the Aged and Feeble, P. C. Bucy, 311

Urological Hypertension, F. Van Goidsenhoven and J. Vandenbroucke, 61

Urological Problems of the Aged, T. D. Moore, 60

Winter Ailments of the Old, H. Barber, 129

INDEX OF BOOK REVIEWS

Emil Villiger's Gehirn and Rückenmark (Brain and Spinal Cord), revised by Eugen Ludwig, 309

Gastritis, Rudolph Schindler, 309

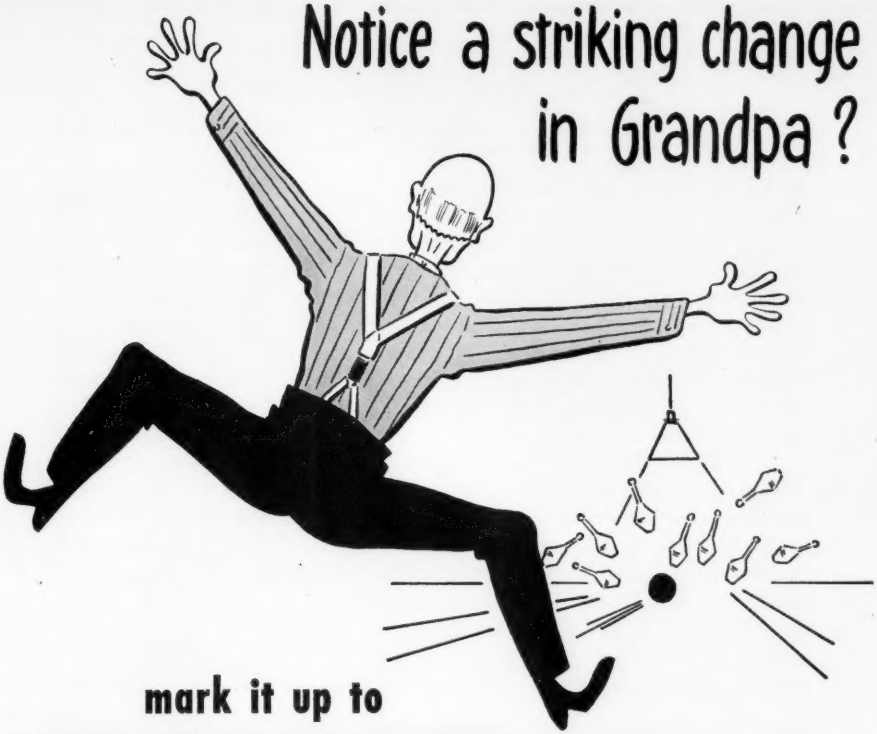
It's an Allergy, Frank G. Crandall, Jr., 309

Principles and Practice of Medicine, Henry A. Christian, 308

Pulmonary Tuberculosis in the Adult; Its Fundamental Aspects, Max Pinner, 308

Techniques and Procedures of Anesthesia, John Adriani, 310

Notice a striking change in Grandpa?



mark it up to CUTTER ARTHRITIS VACCINE!

Lots of patients who thought that their aching, arthritic joints had put them "on the shelf" feel like new people now — after treatment with Cutter Arthritis Vaccine (Sherwood's Formula).

Many doctors report amazing results with this type of vaccine. Crowe* records such comments as "ten years of continuous pain disappeared after the seventh injection."

Such comments are all the more amazing since we can't exactly say *how* this vaccine alleviates arthritic pain — or why it slows the progress of the disease. But the fact remains it *does!* In a large number of cases.

Sherwood's Formula contains 1,000,000 organisms per cc., including polyvalent strains of Streptococci and Staphylococci (each 30%), and M. catarrhalis, B. friedlanderiae, and B. influenzae (each 10%).

Doses of .05 to 1.00 cc., given weekly, are administered intravenously in sub-reactive doses to office or bedridden patients.

No claims are made that Cutter Arthritis Vaccine will *cure* or that it will help all patients. Some who are helped may have relapses, but some will respond to renewed treatment. So it's a safe way to start—backed by a sound theory and carrying with it none of the hazards of gold. Surely, you'll want to see what its results will be in your practice.

CUTTER

Fine Biologicals and Pharmaceutical Specialties

*Crowe, H. Warren, *Handbook of the Vaccine Treatment of Chronic Rheumatic Diseases*, Oxford University Press, 2nd edition, 1932, covering treatment with similar vaccines.

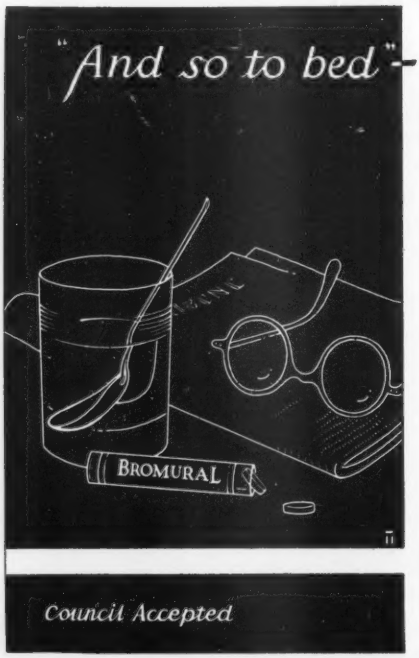
CUTTER LABORATORIES, BERKELEY 1, CALIFORNIA

CARE OF THE AGED AND INFIRM

A Report of the Meeting of the Social Medicine Section of the International Conference of Physicians, London, England.

AFTER the proceedings had been opened by the President, Sir Wison Jameson, Chief Medical Officer of the Ministry of Health, Sir Ernest Rock Carling opened the discussion with an historical introduction. He described how care of the chronic sick had become the responsibility of the municipal hospitals and the public assistance institutions. War time conditions led to a national hospital survey, and this brought the workhouse infirmaries to the notice of the staff of teaching hospitals for the first time. Physicians and surgeons were surprised at the conditions which they encountered, but the work of the Emergency Medical Service had revolutionized the standards in many provincial infirmaries.

Sir Ernest then went on to discuss the question of prevention of chronic disease as an angle of social medicine, the economic aspects of which would be altered by the new National Health Service. He stressed the needs for research, drawing attention to the work of the Nuffield Foundation in encouraging this. After a few words on housing and the need for small institutions for old folk, Sir Ernest went on to describe the recent B. M. A. committee's report on the care of the aged. He mentioned the need for further interest in geriatrics, especially in the field of social medicine. Having referred to future plans to abolish the present Public Assistance Institution,



Council Accepted

BROMURAL

(alphabromisovalerylcarbamide)

A well tolerated hypnotic, inducing a restful sleep. Two tablets upon retiring or in wakefulness during the early morning hours. Contains no barbiturate.

5 grain Tablets and Powder.

BILHUBER-KNOLL CORP.

ORANGE, - - NEW JERSEY

This combination...

CREAMY CONSISTENCY and PALATABLE FLAVOR

...assures ready acceptance

Despite the limited diets so frequently indicated for the aged, nutrition must be maintained in order to prevent weakness and loss of weight. Hence the prescribed diet must be adequately attractive to prevent anorexia or food aversion.

Malt-o-Meal adds "color" and taste appeal to any bland or restricted diet. A fortified farinaceous wheat cereal flavored with toasted malt, it quickly cooks to creamy consistency in three minutes. The delicious flavor of Malt-o-Meal is welcomed by all patients. In addition to the basic nutrients provided by wheat, Malt-o-Meal supplies significant amounts of thiamine, riboflavin, niacin, and iron. Because of its complete blandness and smooth consistency, Malt-o-Meal finds application whenever a bland, easily digested, cereal food is required.

CAMPBELL CEREAL COMPANY, Minneapolis, Minn.

Malt-o-Meal

Malt-o-Meal, an enriched wheat cereal flavored with toasted malt, provides per ounce (dry weight), 0.29 mg. of thiamine, 0.13 mg. of riboflavin, 1.09 mg. of niacin, and 2.00 mg. of iron. Thus Malt-o-Meal provides appreciably more thiamine, riboflavin, and iron than does whole wheat, and 78% of the niacin content of whole wheat.

the speaker ended by appealing for voluntary effort in this field, where so much remained to be done.

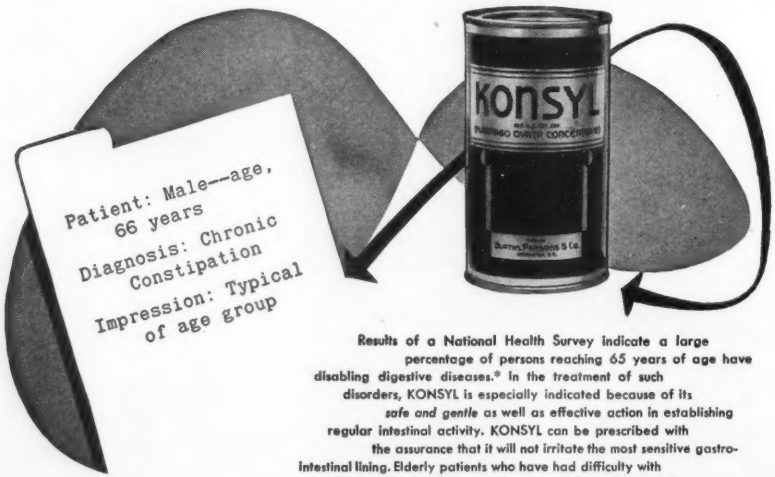
The next speaker, Dr. J. Frandsen of Denmark gave an account of social legislation in Denmark as it affected old people. He mentioned the example set by his country in this field, quoting more than two centuries of effort to help the aged poor.

Dr. J. H. Sheldon of Wolverhampton described the results of a social survey in that town, undertaken by him with the support of the Nuffield Foundation. He mentioned the frequent proximity of sons and daughters to the homes of aged parents, and the way in which old folk often helped them by looking after the grandchildren. One point not often realized was the optical troubles of the elderly and the strange means by which spectacles might be acquired.

Dr. Marjory Warren of Isleworth gave an account of the way in which her well-known unit had been built up during the past twelve years at the West Middlesex Hospital. She emphasized the need to gain the support of the nursing staff in order to establish a tradition of adequate treatment for the chronic sick.

Dr. L. Cosin then read a short paper on the rehabilitation of elderly patients, with emphasis on the orthopaedic angles. He urged the need to keep patients moving, active and interested.

Dr. Trevor H. Howell stressed the need to educate the whole pro-



Results of a National Health Survey indicate a large percentage of persons reaching 65 years of age have disabling digestive diseases.* In the treatment of such disorders, KONSYL is especially indicated because of its *safe and gentle* as well as effective action in establishing regular intestinal activity. KONSYL can be prescribed with the assurance that it will not irritate the most sensitive gastro-intestinal lining. Elderly patients who have had difficulty with bowel-movements for several years will find sharp relief in the easy, well lubricated evacuations KONSYL treatment will afford them. Send for a free professional sample today and test the benefits of KONSYL in your own practice.
*Source—U. S. Public Health Service Survey showed 22.8%

MANUFACTURERS OF
L. A. FORMULA
CONTAINING LACTOSE, DEXTROSE AND PLANTAGO OVATA CONCENTRATE

Burton, Parsons & Co. 1515 U ST., N. W., WASHINGTON 9, D. C.

new evidence of the efficacy of Dexedrine in weight reduction

Excerpts from a recent study entitled, THE MECHANISM OF AMPHETAMINE-INDUCED LOSS OF WEIGHT: A Consideration of the Theory of Hunger and Appetite —by Harris, S. C.; Ivy, A. C., and Searle, L. M.: J. A. M. A. 134:1468 (Aug. 23) 1947.

experiment 1. Does Dexedrine Sulfate, by controlling appetite, decrease food intake and body weight in human subjects?

results ". . . our obese subjects lost weight when placed on a diet which allowed them to eat all they wanted three times a day . . ."

experiment 4. Does the rather prolonged administration of Dexedrine cause any evidence of disturbance of tissue functions?

results "No evidence of toxicity of the drug as employed in these studies was found . . . no evidence of deleterious effects of the drug was observed."

Dexedrine Sulfate

(*dextro-amphetamine sulfate, S.K.F.*) Tablets Elixir

for control of appetite in weight reduction

Smith, Kline & French Laboratories, Philadelphia

fession concerning the possibilities of geriatric medicine. He then went on to describe some results of his researches in gerontology and geriatric pathology.

Professor F. A. E. Crew of Edinburgh, viewing the wider field, urged that more should be done to encourage employment of the elderly. In a short but witty speech he spoke of the fact that we were adding life to the years; social medicine must now find something to fill those years.

Other speakers included Dr. A. E. B. Harding, a London general practitioner, and Dr. W. Hobson, Lecturer in Preventive Medicine, University of Bristol.

Acclaimed on all sides . . .

Aging Successfully

By GEORGE LAWTON

"Its easy, conversational style makes it easy to read; its understanding attitude makes it palatable; its sound advice makes it helpful."—*Journal of the American Medical Association*

"I have seen nothing better—or nearly as good—in tone or technique." —Karl A. Menninger, M.D.

"This is an important book."—*New York Times.*

"A broad and realistic view . . . based upon extensive research and personal counseling experience."—*Sociology and Social Research.* $2.75

New Goals for Old Age

Edited by GEORGE LAWTON

"The various chapters, written from different points of view in accordance with the professions and status of the authors, are all intensely interesting and enjoyable."—*Psychosomatic Medicine.* $2.75

Columbia University Press • New York 27, N. Y.

BURNHAM SOLUBLE IODINE

For 45 years "B.S.I." has been the favored iodine in thyroid disorders. Accurate dosage, 1 mg. iodine per drop, in ½ glass water.

Send for sample and dosage suggestions.

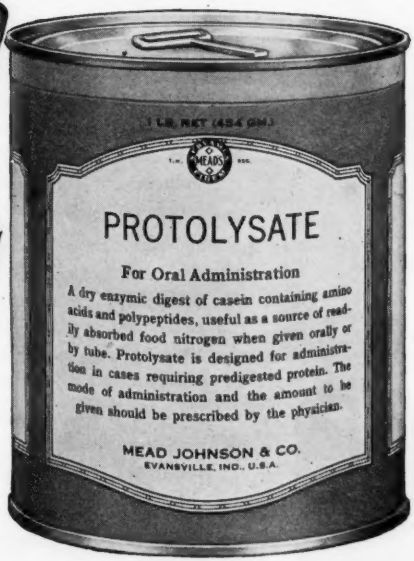
Burnham-Soluble Iodine Co., Auburndale 66, Boston, Mass.

1000 cc. flasks
500 cc. flasks
125 cc. flasks
for hospitals

1 LITER (1000 CC.)
AMIGEN 5%
IN 5% DEXTROSE SOLUTION
WARNING: Do not use if the solution is cloudy or if sediment is present. The contents of this bottle must not be used for more than one infusion. For storage, keep the unopened bottle in a cool place.
Use before
Test No.
MEAD JOHNSON & CO.
EVANSVILLE, IND., U.S.A.

COUNCIL-ACCEPTED
AMIGEN
for parenteral administration of amino acids

The function of Amigen and Protolysate is to supply the amino acids essential for nutrition. Both can be given in place of protein when protein cannot be eaten or digested, or in addition to protein when the protein intake is insufficient. Administered in adequate amounts, they prevent wastage of protein, restore previous losses, or build up new body protein.


1 LB. NET (454 GM.)
PROTOLYSATE
For Oral Administration
A dry enzymic digest of casein containing amino acids and polypeptides, useful as a source of readily absorbed food nitrogen when given orally or by tube. Protolysate is designed for administration in cases requiring predigested protein. The mode of administration and the amount to be given should be prescribed by the physician.
MEAD JOHNSON & CO.
EVANSVILLE, IND., U.S.A.

1 lb. cans at drug stores

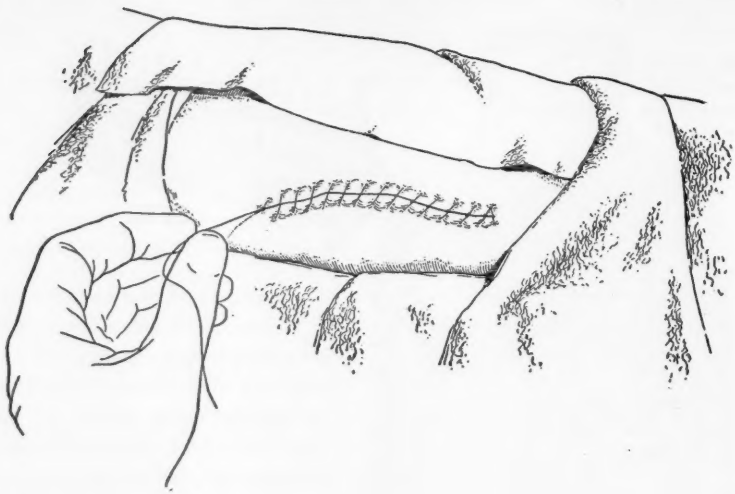
COUNCIL-ACCEPTED
PROTOLYSATE
for oral and tube feeding of amino acids

Like Amigen, Protolysate is an enzymic digest of casein and consists of amino acids and polypeptides. Like Amigen, Protolysate supplies the nitrogen essential for maintenance, repair and growth.

Unlike Amigen, which may be employed both orally and parenterally, Protolysate is designed only for oral use.

MEAD JOHNSON & CO., EVANSVILLE 21, INDIANA

There is no shortage now of AMIGEN for parenteral use. There is no shortage now of PROTOLYSATE for oral use.



Postsurgical healing can be enhanced

In cases with an avitaminosis, wound healing can be accelerated and hospitalization time shortened by preoperative and postoperative administration of Pulvules 'Becotin with Vitamin C' (Vitamin B Complex with Vitamin C, Lilly). Following major surgery there is usually rapid depletion of the water-soluble vitamins. This is particularly true of patients undergoing surgery of the gastro-intestinal tract.

Operations of choice allow physicians time to correct deficiencies before surgery. In urgent cases, preoperative and postoperative parenteral administration of Ampoules 'Betalin Complex' (Vitamin B Complex, Lilly) and Ampoules 'Cevalin' (Ascorbic Acid, Lilly) is indicated.

As soon after surgery as the patient can take oral medication, one or more Pulvules 'Becotin with Vitamin C' may be prescribed until the patient resumes normal activity.

BECOTIN WITH VITAMIN C

One pulvule provides a therapeutic dose of all the known water-soluble vitamins.

ELI LILLY AND COMPANY • INDIANAPOLIS 6, INDIANA, U.S.A.

for arterial hyper*TENSION*

RELAXATION
reinforced

Teaching patients how to relax is a primary consideration in the management of arterial hypertension. In many instances this is not a simple task, but it can often be made easier by supplementing common sense instructions with Theominal. This slow-acting vasodilator sedative helps to bring about a gradual reduction of blood pressure and through its gentle sedative effect reinforces relaxation.

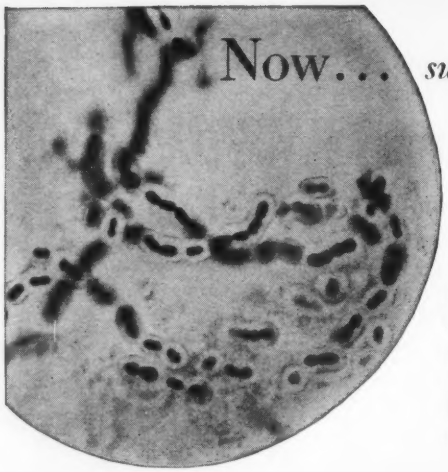
DOSAGE: The customary dose of Theominal is 1 tablet two or three times daily; when improvement sets in, the dose may be reduced. Each tablet contains theobromine 5 grains and Luminal ½ grain.

THEOMINAL

SUPPLIED IN BOTTLES OF 25, 100 AND 500 TABLETS

Winthrop
CHEMICAL COMPANY, INC.
New York 13, N. Y. • Windsor, Ont.

THEOMINAL and LUMINAL, trademarks Reg. U. S. Pat. Off. & Canada



Now... *successful active type-specific immunization against pneumococcal pneumonia*

"The evidence . . . demonstrates clearly that immunization of man with the specific capsular polysaccharides of pneumococcus types I, II, V, and VII is effective in preventing the development of pneumonia due to these types in the immunized subjects."[1]

1. MacLeod, C. M.; Hodges, R. G.; Heidelberger, M., and Bernhard, W. G.: J. Exp. Med. *82*:445 (Dec. 1) 1945.

Photomicrograph of DIPLOCOCCUS PNEUMONIAE (magnified 1,350 times), after "typing" with homologous antiserum by Neufeld method. The swollen, unstained, sharply outlined capsules contain the type-specific polysaccharide, which is mixed with similar antigens from other types of pneumococci in the preparation of Solution of Pneumococcus Polysaccharides.

In the above mentioned investigation on 17,035 subjects with a preparation made by Squibb, pneumonia of the types represented in the vaccine was entirely eliminated in the immunized group (8,586), excepting for four cases which developed before specific immunity had been established. And in the non-immunized group of 8,449 controls, all of whom were closely associated with the immunized group, the incidence of these types of pneumonia was *greatly lowered* through the reduction of "carriers." Reactions were mild. The slight arm soreness reported by those injected lasted only 3 to 4 days.

Solution of
PNEUMOCOCCUS POLYSACCHARIDES
Type-specific

supplied in two combinations of types to which adults and children, respectively, are generally most susceptible:

COMBINATION A: Containing types 1, 2, 3, 5, 7 and 8. (Primarily for adults)

COMBINATION B: Containing types 1, 4, 6, 14, 18 and 19. (Primarily for children)

DOSAGE: A *single* subcutaneous injection of 1 cc. for adults, or children over 12 years of age; 0.5 cc. for children under that age. Immunity usually develops within 6 to 9 days and is effective for at least one year.

AVAILABLE: Each combination supplied in 1 cc. and 5 cc. rubber-stoppered vials.

Professional leaflet, "Active Immunization Against Pneumococcal Pneumonia" is available upon request.

SQUIBB MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

SYMBOLS OF SIGNIFICANCE

TAKA-COMBEX

Kapseals

Gastro Intestinal complaints are common concomitants of almost every disease process. G. I. dysfunction impairs digestion and imperils vitamin adequacy.

TAKA-COMBEX KAPSEALS help meet these problems by joining the potent carbohydrate digestant action of Taka-Diastase with significant amounts of the well-known Combex combination of Thiamine (B_1), Riboflavin (B_2), Pyridoxine (B_6), Pantothenic Acid and Nicotinamide, together with other components of the vitamin B complex derived from liver; plus vitamin C.

TAKA-COMBEX KAPSEALS are one of a long line of Parke-Davis preparations whose service to the profession created a dependable symbol of significance in medical therapeutics—
MEDICAMENTA VERA.

TAKA-COMBEX KAPSEALS are supplied in bottles of 100 and 1000.

PARKE, DAVIS & COMPANY · DETROIT 32, MICHIGAN

MEDICAMENTA VERA · P D & CO.

Q: How Can Hot Ralston Cereal Aid Older Patients?

A: *By helping combat common constipation; by releasing extra energy from foods; by supplying needed protein.*

Hot Ralston is Whole Grain Wheat With Added Wheat Germ

The wheat germ—best cereal source of thiamine (vitamin B_1)—promotes intestinal health; whole grain gently stimulates normal intestinal activity. Vitamin B_1 also helps release full measure of energy from carbohydrate foods.

Supplies Protein of High Biological Value

And older patients need protein to repair body tissues. Much of this protein can come from hot Ralston—to supplement that supplied by meat, milk, cheese.

Has Delicious, Satisfying Flavor

Hot Ralston, with its added wheat germ, has a rich heart-of-wheat-flavor that adds interest to bland diets.

TWO KINDS OF HOT RALSTON

COOKS IN 5 MINUTES

COOKS IN 10 SECONDS

RALSTON PURINA COMPANY
Checkerboard Square • St. Louis 2, Missouri

too common in geriatrics...

iron deficiency

In persons over fifty iron deficiency is common. But if proper iron medication is instituted, normal hemoglobin levels can usually be attained.

In older patients, Stieglitz believes that any hemoglobin level below 90 per cent of the mathematical mean normal warrants attention. (Clinics *4*:1322 [Feb.] 1946.)

Adequate dosage of ferrous sulfate — grain for grain the most effective form of iron — is supplied by FEOSOL ELIXIR.

Smith, Kline & French Laboratories, Philadelphia

Feosol Elixir

The combination of — **Sulfamerazine *Microcrystalline*..1.5 Gm. (22 gr.)**
Sulfadiazine *Microcrystalline*....1.5 Gm. (22 gr.)

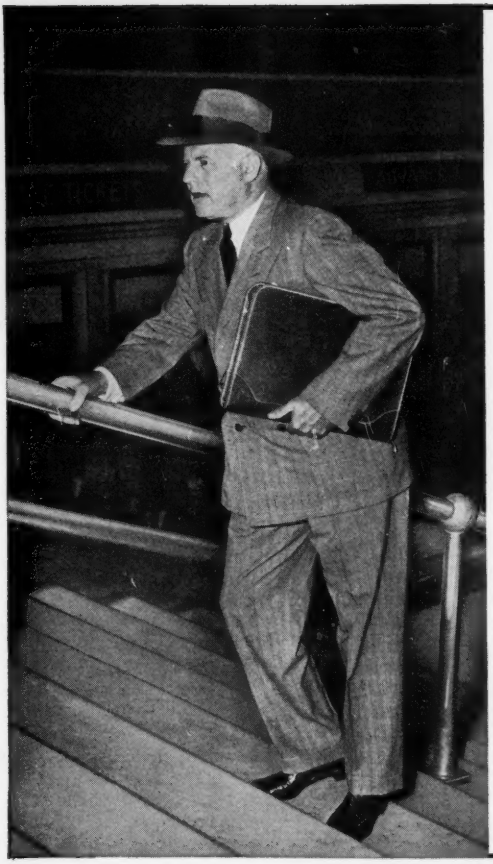
is presented in Mer-Diazine. Equal parts of sulfamerazine and sulfadiazine have been found by Flippin et al* to lead "to a markedly decreased incidence of crystalluria compared with that observed when either compound was administered singly . . . The use of sulfonamide mixtures avoids certain disadvantages associated with the administration of sodium bicarbonate . . ."

Liquoid Mer-Diazine — presents a palatable, homogenized suspension of these two sulfonamides. The microcrystalline form in which the drugs are present assures the most rapid absorption; slow excretion of sulfamerazine makes maintenance of a suitable blood level relatively simple; both sulfas penetrate readily into ascitic, pleural and cerebrospinal fluids.
Liquoid Mer-Diazine provides convenience in administration—particularly useful in pediatrics.
Warning: Sulfadiazine and Sulfamerazine may cause toxic reactions.

Available in 4 fl. oz. and pint bottles. Samples on request.

*Flippin, H. F. and Reinhold, J. G.: Ann. Int. Med., 25:433 (Sept.) 1946.

McNEIL
LABORATORIES, INC., PHILADELPHIA 32, PENNSYLVANIA



ANGINA PECTORIS

and other Manifestations of CORONARY INSUFFICIENCY

The following episodes may be prevented by appropriately regulated administration of a vasodilator having a *sustained* effect:

FOR THE PERSON

- ***who is compelled to stop and rest when climbing a flight of stairs.***
- ***who suffers "indigestion" and "gas" on exertion, or after a heavy meal.***
- ***who is stricken with precordial pain on unusual exertion or emotion, or when exposed to cold.***

The vasodilatation produced by Erythrol Tetranitrate Merck begins 15 to 20 minutes after administration, and lasts from 3 to 4 hours.

It is generally agreed that the acute attack of anginal pain is most readily relieved by the prompt removal of the provocative factor, and by the use of nitrites. For prophylactic purposes—to control anticipated paroxysms—the delayed but prolonged action *of erythrol tetranitrate is effective. Erythrol tetranitrate, because of its slower* and more prolonged *action, is also considered preferable for the purpose of preventing nocturnal attacks.*

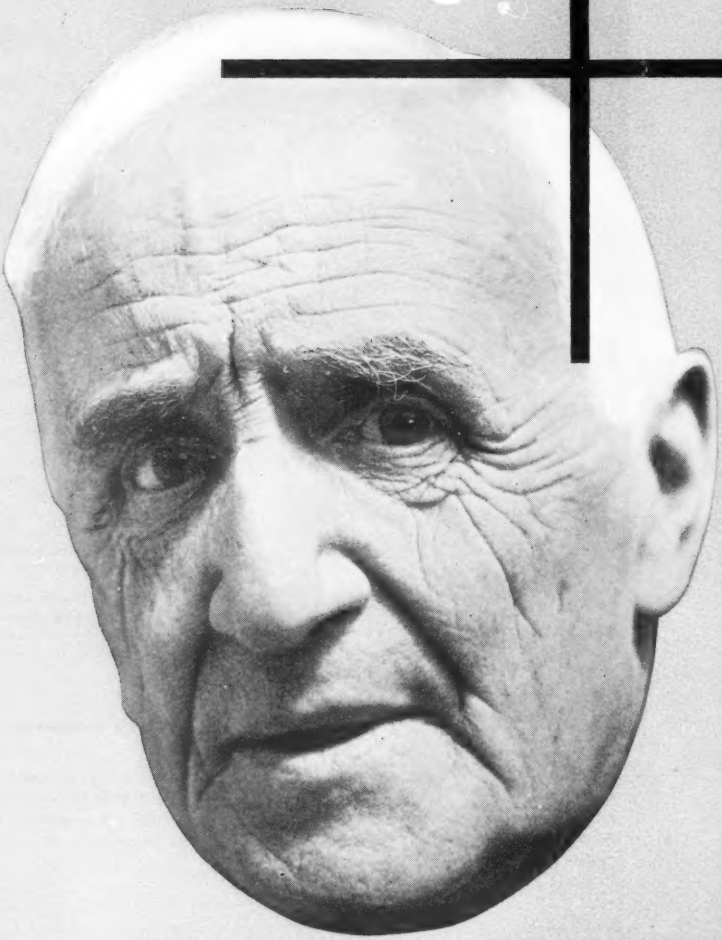
ERYTHROL TETRANITRATE
MERCK
(ERYTHRITYL TETRANITRATE)

Council *Accepted*

MERCK & CO., Inc. RAHWAY, NEW JERSEY
Manufacturing Chemists

MERCK MERCK

The aged are



White's

White LABORATORIES, INC., Pharmaceutical Manufacturers, Newark 7, N. J.

more subject . . .

The continuous alteration of anatomy, histology and physiology during the aging process interferes greatly with the absorption and metabolic economy of B Complex factors.

So common is this interference that it is often difficult to draw the line between findings due to old age itself and those caused by B Complex deficiency.

White's Multi-Beta Liquid fortifies the geriatric diet with those vitamin B factors most apt to be lacking in the restricted or inadequately utilized intake of the elderly patient.

Easily administered with fruit juice or milk, imparts no odor or taste to soft foods; pleasant to take directly.

In bottles (with suitable droppers)
of 10 cc., 25 cc. and 50 cc.

Multi-beta *Liquid*

a helping hand for the aging patient

When man's spirit is younger than his stomach...

Knox is a wonderful food

As any doctor knows, many older people are often far more active than their years would seem to warrant—even though the individual may have impaired digestion. In such a situation Knox Gelatine is extremely helpful...for with pure, unflavored Knox it is easy to make dishes within the limits of a prescribed diet, that are both attractive and "real tasty."

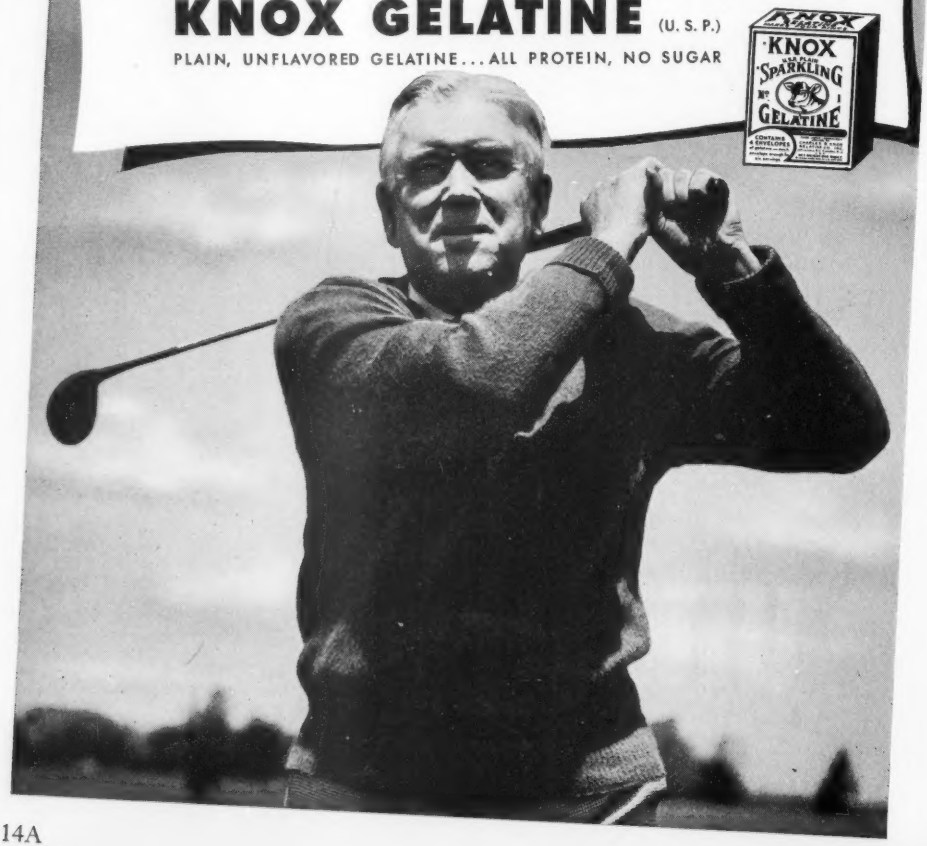
Knox can be combined with fish, meat, or eggs, as well as fruits or vegetables, in the widest variety of delicious dishes. And in the cases where the doctor wishes to supplement protein from other dietary sources, it is easily combined with warm milk or fruit juices in a gelatine drink.

The scope of the Knox recipes is so wide there are many, many appetizing dishes that add not only protein but other important dietary factors to the diet.

FREE DIETS AND RECIPES. ***Specially prepared dietary booklets will be sent FREE upon request to Knox Gelatine, Department 485, Johnstown, N. Y.***

KNOX GELATINE (U. S. P.)

PLAIN, UNFLAVORED GELATINE...ALL PROTEIN, NO SUGAR



Now fortified with Folic Acid and B vitamins-

Patients with chronic or nutritional anemias may be deficient in several factors essential for blood regeneration—iron, liver factors and B vitamins, including folic acid.

Each daily dose of Bēpron Fortified (1 fluidounce) supplies—

Total soluble constituents of 2 ounces of whole beef liver
3 grains of iron (Fe) as saccharated ferrous iron, equivalent to 9.6 grains of dried ferrous sulfate
5 mg. of folic acid
2 mg. of thiamine hydrochloride
2 mg. of riboflavin
15 mg. of niacinamide.

Bēpron Fortified is recommended for the treatment of chronic or nutritional hypochromic microcytic anemias, and for maintenance therapy of certain macrocytic or normocytic anemias.

Supplied in bottles of 16 fluidounces.

BEPRON® FORTIFIED

Wyeth®

WYETH INCORPORATED • PHILADELPHIA 3, PA.

Reduces the hazards of

intensive sulfonamide therapy

50th ANNIVERSARY

By combining sulfadiazine and sulfathiazole in a single preparation, the dangers of crystalluria and its troublesome complications are greatly reduced. Recent studies* have shown that the total urine solubility of two sulfonamides is greater than that of a single sulfonamide, since the presence of one exerts little influence upon the solubility of the other. Consequently, a greater total quantity of concurrently administered sulfadiazine and sulfathiazole can be dissolved in the urine than of either drug alone.

Added renal protection is provided in Aldiazol by the presence of sodium citrate and sodium lactate which alkalinize the urine and further increase sulfonamide solubility.

Rapid absorption of Aldiazol is promoted, since the contained sulfadiazine and sulfathiazole are in microcrystalline form. In consequence, higher blood levels are attained in shorter time than with ordinary sulfonamides.

Aldiazol is indicated whenever sulfonamide therapy is called for. Because of its liquid form, it is especially useful in children, facilitating accurate dosage as well as administration.

Each teaspoonful of Aldiazol contains:

Sulfadiazine (microcrystalline)	0.25 Gm.	Sodium Citrate	0.50 Gm.
Sulfathiazole (microcrystalline)	0.25 Gm.	Sodium Lactate	0.60 Gm.

*Lehr, D.: Proc.Soc.Exper.Biol.& Med. *58*:11 (Jan.) 1945

ALDIAZOL

Microcrystalline Sulfadiazine and Sulfathiazole in an alkalizing vehicle containing Sodium Citrate and Sodium Lactate

The S. E. MASSENGILL COMPANY
Bristol, Tenn.-Va.
NEW YORK • SAN FRANCISCO • KANSAS CITY

SE M CO

PRIVINE

A Different Vasoconstrictor

IT IS HIGHLY POTENT

The 0.05 per cent solution of Privine hydrochloride —only one part in two thousand—produces satisfactory shrinkage of the nasal mucosa in practically every patient. Privine is bland and non-irritating due to its isotonicity and buffered pH.

ITS ACTION IS PROLONGED

The effect of each application of Privine lasts from two to six hours. The long interval of comfort afforded and the relative absence of central nervous stimulation permit the use of Privine before retiring with the assurance of non-interference with restful sleep.

Effectiveness with minimal side reactions

PRIVINE 0.05%

Because of its extraordinary potency and prolongation of effect, Privine 0.05 per cent is fully adequate for practically all prescription purposes.

The 0.1 per cent concentration should be reserved for office procedures or the occasional refractory patient.

PRIVINE (brand of naphazoline) Trade Mark Registered U. S. Pat. Off.

Ciba

PHARMACEUTICAL PRODUCTS, Inc. SUMMIT, NEW JERSEY

Here's tempting, real meat for patients on soft, smooth diets!

Swift's Strained Meats
specially prepared— fine enough for tube-feeding

Here's protein-rich meat that patients on soft, smooth diets can eat and *enjoy!* Swift's specially prepared Strained Meats provide an excellent base for a high-protein, low-residue diet—in a form that is chemically and physically non-irritating. There are six different, highly palatable meats: beef, lamb, pork, veal, liver and heart. These wholesome meats are readily accepted by most patients, even when normal appetite is impaired.

The individual particles of Swift's Strained Meats are fine enough to pass through the nipple of a nursing bottle—may easily be used in tube-feeding. Swift's Strained Meats are prepared with expert care from selected, lean U. S. Government Inspected Meats, carefully trimmed of fat and cooked to retain a maximum of the valuable meat nutrients—biologically complete proteins, B vitamins and minerals. Swift's Strained Meats are convenient to use—come ready to heat and serve. Each tin, three and one-half ounces.

All nutritional statements made in this advertisement are accepted by the Council on Foods and Nutrition of the American Medical Association.

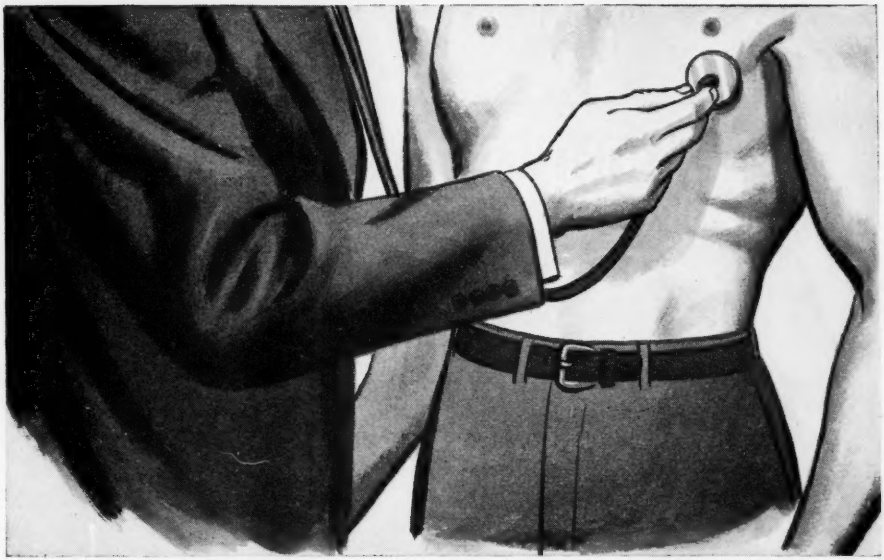
Swift's Diced Meats

For patients on a soft, high protein, low-residue diet who can eat meat in a form less fine than Strained, Swift's Diced Meats offer an excellent appetizing source of proteins, B vitamins and minerals. Swift's Diced Meats are tender, juicy cubes of meat—offer a variety of: beef, lamb, pork, veal, liver and heart, five ounces per tin.

If you wish samples of Swift's Strained and Swift's Diced Meats together with complete information, write: Swift & Company, Dept. B.F., Chicago 9, Ill.

SWIFT QUALITY FOODS

SWIFT & COMPANY • CHICAGO 9, ILLINOIS



If you are still using the leaf preparations...

The routine use of Digitaline Nativelle in the treatment of congestive heart failure offers advantages to both the physician and patient. When rapid digitalization is desirable, oral administration of two doses of 0.6 mg. at an interval of 3 to 4 hours produces the desired effect in 6 to 10 hours. Nausea and vomiting are virtually absent on this plan.

Digitaline Nativelle offers the further advantage of absolute uniformity of potency, permitting dosage determination on the basis of weight of drug. The initial digitalizing dose of Digitaline Nativelle is 1.2 mg. given in equally divided doses at an interval of 3 to 4 hours; maintenance is readily effected on 0.1 mg. to 0.2 mg. daily, depending upon individual response and physical activity.

Digitaline Nativelle is the chief active glycoside of Digitalis purpurea, 95 per cent pure digitoxin. It reproduces in all respects the cardiotonic action of whole leaf digitalis on the myocardium. Specifically indicated in congestive heart failure, auricular flutter, auricular fibrillation.

To insure your patients' receiving the original, Council Accepted digitoxin, kindly specify Digitaline Nativelle on your prescriptions.

Physicians are invited to request a complimentary copy of brochure "The Management of the Failing Heart" and a sample of Digitaline Nativelle sufficient to digitalize one patient.

How Supplied

Digitaline Nativelle is available through all pharmacies in 0.1 mg. tablets (pink) and 0.2 mg. tablets (white) in bottles of 40 and 250, and in ampules of 0.2 mg. (1 cc.) and 0.4 mg. (2 cc.) in packages of 6 ampules and 50 ampules.

VARICK PHARMACAL COMPANY, INC.
A Division of E. Fougera & Co., Inc.
75 Varick Street, New York 13, N.Y.

DIGITALINE NATIVELLE

IMPROVED TOLERANCE

. . . BETTER RESPONSE

IN IRON-DEFICIENCY ANEMIAS

White LABORATORIES, INC.,
Pharmaceutical Manufacturers,
Newark 7, N. J.

White's

A definite advance in the treatment of iron-deficiency anemias is offered in the new Molybdenum-Iron Complex, White's Mol-Iron.

Clinical investigations confirm these advantages of Mol-Iron over ferrous sulfate alone: *substantially reduced incidence of gastro-intestinal side-effects* coupled with *more rapid hemogenesis*—even with approximately half the intake of therapeutic iron.

The combined gastro-intestinal tolerance and speed of clinical response to molybdenum-iron therapy are responsible for the rapidly increasing use of Mol-Iron in hypochromic anemias of pregnancy, chronic blood loss and nutritional origin.

White's Mol-Iron is a specially processed, co-precipitated complex of molybdenum oxide 3 mg. (1/20 gr.) and ferrous sulfate 195 mg. (3 gr.).

In bottles of 100 and 1000 tablets.

Try Mol-Iron in your most "iron-intolerant" case of hypochromic anemia. Confirm for yourself the more rapid therapeutic action and greater freedom from side-effects.

Mol-iron *Tablets*

MOLYBDENIZED FERROUS SULFATE

A Nutrition Handicap Which Must Be Avoided

THE significance of breakfast as an important means of meeting the daily dietary allowances as suggested by the National Research Council was vividly demonstrated in a recent study.† This investigation revealed that subjects who skipped breakfast entirely or who ate a skimpy breakfast failed to receive their daily nutritional requirements in the other two meals of the day. Hence breakfast must be regarded not only as a meal which forestalls morning hunger and fatigue, but also one upon which the organism is closely dependent for its daily share of essential nutrients.

Virtually all nutritionists agree that breakfast should supply from one-fourth to one-third of the daily caloric and nutrient needs. A widely endorsed breakfast pattern, composed of fruit, cereal, milk, bread and butter, aids in organizing a well-rounded morning meal. The cereal serving—consisting of hot or ready-to-eat breakfast cereal, milk and sugar—is a universally recommended component of this breakfast. This serving contributes worth-while amounts of many essential nutrients, including biologically complete proteins, B-complex vitamins, and important minerals.

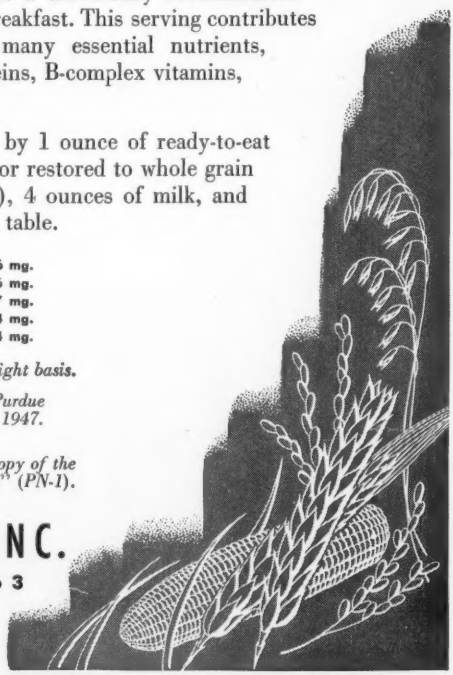
The quantitative contribution made by 1 ounce of ready-to-eat or hot cereal* (whole grain, enriched, or restored to whole grain values of thiamine, niacin and iron), 4 ounces of milk, and 1 teaspoonful of sugar is indicated by this table.

CALORIES.....	202	PHOSPHORUS....	206 mg.
PROTEIN.....	7.1 Gm.	IRON.....	1.6 mg.
FAT.....	5.0 Gm.	THIAMINE.....	0.17 mg.
CARBOHYDRATE..	33.0 Gm.	RIBOFLAVIN.....	0.24 mg.
CALCIUM.....	156 mg.	NIACIN.....	1.4 mg.

**Composite average of all breakfast cereals on dry weight basis.*

†*Jackson, P., and Schuck, C.: Dietary Habits of Purdue University Women, J. Home Econ. 39:334 (June) 1947.*

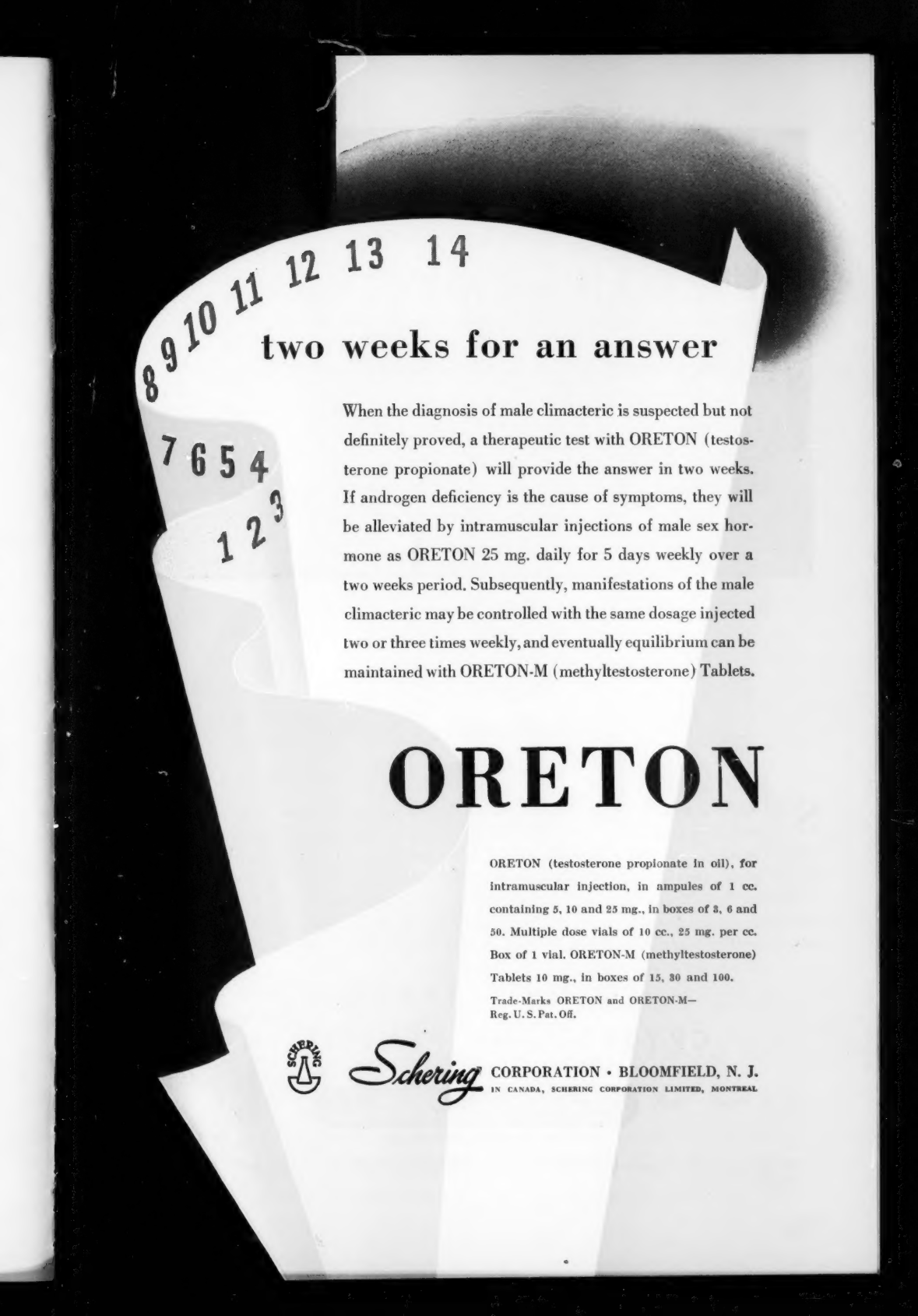
Physicians are invited to send for a complimentary copy of the brochure "Cereals and Their Nutritional Contribution" (PN-1).



CEREAL INSTITUTE, INC.

135 South La Salle Street • Chicago 3

The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.



two weeks for an answer

When the diagnosis of male climacteric is suspected but not definitely proved, a therapeutic test with ORETON (testosterone propionate) will provide the answer in two weeks. If androgen deficiency is the cause of symptoms, they will be alleviated by intramuscular injections of male sex hormone as ORETON 25 mg. daily for 5 days weekly over a two weeks period. Subsequently, manifestations of the male climacteric may be controlled with the same dosage injected two or three times weekly, and eventually equilibrium can be maintained with ORETON-M (methyltestosterone) Tablets.

ORETON

ORETON (testosterone propionate in oil), for intramuscular injection, in ampules of 1 cc. containing 5, 10 and 25 mg., in boxes of 3, 6 and 50. Multiple dose vials of 10 cc., 25 mg. per cc. Box of 1 vial. ORETON-M (methyltestosterone) Tablets 10 mg., in boxes of 15, 30 and 100.

Trade-Marks ORETON and ORETON-M—
Reg. U. S. Pat. Off.

SCHERING

Schering CORPORATION • BLOOMFIELD, N. J.
IN CANADA, SCHERING CORPORATION LIMITED, MONTREAL

50,000 Units each
Crystalline Penicillin G Potassium Salt

CSC

SOLUBLE Tablets Crystalline Penicillin represent a signal advancement in penicillin therapy. Containing neither binder nor excipient, they provide 50,000 units of Crystalline Penicillin G Potassium per tablet. Dissolving rapidly in water, milk, syrups and saliva, they find application in pediatric practice, in aerosol therapy, and in sublingual administration. Heat stable, require no refrigeration. They permit large quantities of penicillin to be conveniently stored or carried without bulkiness in the emergency bag. Available through all pharmacies in boxes of 24, each tablet aluminum foil wrapped.

SOLUBLE TABLETS
CRYSTALLINE PENICILLIN

C.S.C. Pharmaceuticals
A DIVISION OF
COMMERCIAL SOLVENTS CORPORATION
17 EAST 42nd STREET NEW YORK 17, N. Y.

SYSTEMIC REHABILITATION

Even in advanced stages of arthritis

Even in advanced stages of arthritis when many patients consider themselves incurable, a complete rehabilitation program can do much to restore function and abolish pain.

Darthronol is an important integral part of such a rehabilitation program. It combines the antiarthritic effects of massive dosage vitamin D with the systemic actions of eight other vitamins —the need for which is greater in arthritics than in normal individuals.

EACH CAPSULE CONTAINS:

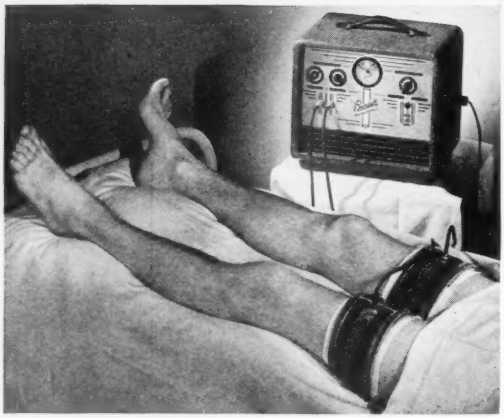
Vitamin D (Irradiated Ergosterol)	50,000 U.S.P. Units
Vitamin A (Fish-Liver Oil)	5,000 U.S.P. Units
Ascorbic Acid	75 mg.
Thiamine Hydrochloride	3 mg.
Riboflavin	2 mg.
Pyridoxine Hydrochloride	0.3 mg.
Calcium Pantothenate	1 mg.
Niacinamide	15 mg.
Mixed Tocopherols	4 mg.
(Equivalent to 3 mg. of synthetic Alpha Tocopherol)	

a **ROERIG** *preparation*

DARTHRONOL

for the Arthritic

J. B. ROERIG AND COMPANY • 536 Lake Shore Drive • Chicago 11, Ill.



AGE and the PERIPHERAL ARTERIES

Diabetes

"The incidence of gangrene in diabetic patients increases with each decade of life after forty years."

—Duncan, G. G.: Diseases of Metabolism, Philadelphia, W. B. Saunders Co., 1942, page 795.

With insulin, more elderly diabetics are seen, and peripheral vascular disease as a complication is more frequently encountered

Early detection of changes in the vessels of the extremities is highly desirable in the prevention of gangrene. Even after gangrene has developed its extension may be limited by instituting proper therapy.

THE BURDICK RHYTHMIC CONSTRICTOR

has proved efficacious in increasing the peripheral vascular bed and providing symptomatic relief in the following peripheral vascular diseases:

ARTERIOSCLEROSIS
DIABETIC ULCERS AND GANGRENE
ACUTE VASCULAR OCCLUSION
EARLY THROMBOANGIITIS OBLITERANS
INTERMITTENT CLAUDICATION
CHILBLAINS

Write to Dept. 1, Burdick Corporation, Milton, Wis., for clinical Information

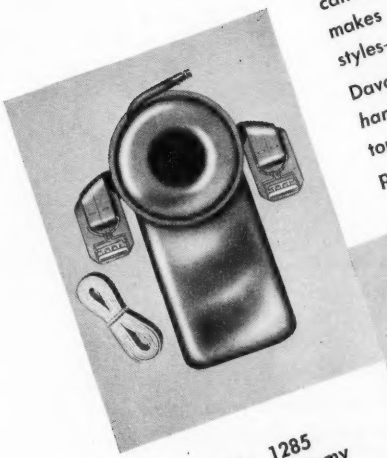
Burdick

THE BURDICK CORPORATION

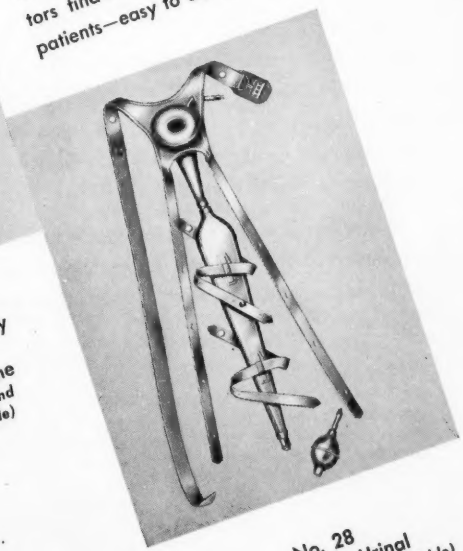
Comfort SHAPED BY SKILLED HANDS FROM FINE MATERIALS—

Your patients who need a urinal or colostomy outfit can rely on Davol to bring them comfort. For Davol makes a wide variety of scientifically designed styles—soft, well-fitting and easy to wear.

Davol urinals and colostomy outfits are made by hand—from 98% nature-grown rubber. Many doctors find that Davol products are easy on their patients—easy to clean, too.



No. 1285
Davol Colostomy Outfit—
Without Frame
(Other styles and sizes available)



No. 28
Davol Male Urinal
(Other styles and sizes available)

DAVOL

DAVOL RUBBER COMPANY
PROVIDENCE 2, RHODE ISLAND

On the Dual Value of *Candy*

Socially candy has long been accepted as a pleasant part of our daily lives. From early childhood on, candy is considered an appropriate accompaniment of the festive spirit of birthdays, holidays, anniversaries and other joyous occasions.

In recent years, with the advancing knowledge of nutrition, the values of candy as a worth-while part of the daily diet have also become recognized. Most of the kinds of candy manufactured today are made of a number of valuable foods which contribute to the extent they are used to the satisfaction of many nutritional needs.*

Whether enjoyed as a delectable tidbit during a friendly gathering—or served at the end of a family meal—or eaten as a quick energy food following strenuous activity, candy has a unique and valid place in the human dietary.

---

*The candies in the manufacture of which milk, butter, eggs, fruits, nuts or peanuts are used, *to this extent* also (a) provide biologically adequate proteins and fats rich in the unsaturated fatty acids; (b) present appreciable amounts of the important minerals calcium, phosphorus, and iron; (c) contribute the niacin, and the small amounts of thiamine and riboflavin, contained in these ingredients.

COUNCIL ON CANDY OF THE NATIONAL CONFECTIONERS' ASSOCIATION

1 NORTH LA SALLE STREET • CHICAGO 2, ILLINOIS

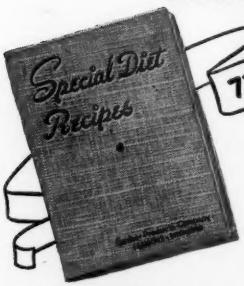
No, she can't eat everything any more . . .

BUT her special diet can be varied and appetizing!

Your older patients who require bland foods, low in crude fiber, can enjoy them in wide variety—with *Gerber's Strained Foods.* Vegetables, meat-combinations, soups, fruits and desserts are flavorful. Yet, Gerber's use only minute amounts of salt in preparing these purée-smooth, easily digested foods.

If a low-residue diet isn't a must—your older patients' menus can be built around Gerber's Junior Foods. Bland as Gerber's Strained Foods—and prepared with the same care under the direction of qualified nutritionists.

A tasty trio of cereals—Gerber's Cereal Food, Strained Oatmeal and Barley Cereal are low in crude fiber, rich in added iron, calcium and B-complex vitamins. Particularly suitable for your patients suffering from certain nutritional deficiencies. Ready-to-serve—like all Gerber Foods.



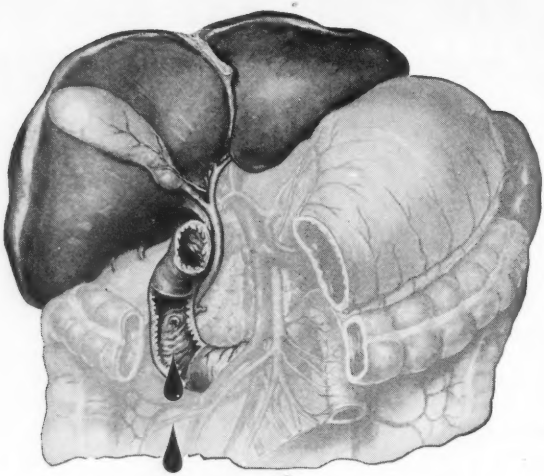
73 TEMPTING RECIPES FOR SPECIAL DIETS

Write for copies of this book prepared by Gerber nutritionists. Professional reference cards also available. Address Gerber's Dept. JG11-7, Fremont, Mich.

Gerber's

FREMONT, MICH. OAKLAND, CAL

3 CEREALS 18 STRAINED FOODS 13 JUNIOR FOODS



OBJECT: DRAINAGE

In discussing the management of chronic cholecystitis without stones, Albrecht states:

"The object of the medical procedure is to assist in draining an infected organ."*

The specific hydrocholeretic action of Decholin (chemically pure dehydrocholic acid) accomplishes this purpose.

Bile secretion induced by Decholin is thin and copious, flushing the passages from the liver to the sphincter of Oddi, and carrying away infectious and other accumulated material.

Decholin

HOW SUPPLIED:

Decholin in 3¾ gr. tablets. Boxes of 25, 100, 500 and 1000.

*Albrecht, F. K.: Modern Management in Clinical Medicine, Baltimore, The Williams and Wilkins Co., 1946, p. 170.

AMES COMPANY, Inc.

ELKHART, INDIANA

put out the "welcome mat"

FOR MILK!

In flavored and sweetened rennet powder and tablets, geriatricians will find a happy solution to the problem of stimulating the milk-jaded appetites of older patients for this essential nutrient. The gaily colored, deliciously flavored and more easily digested milk desserts—simply made by transforming uncooked milk into rennet desserts with either rennet powder or household rennet tablets—provide a welcome dietary change to the eye, the tongue and the stomach of the geriatric patient.

"JUNKET" Brand RENNET-POWDER — already sweetened; six popular flavors.

"JUNKET" Brand RENNET TABLETS — unsweetened, unflavored.

"JUNKET" is the trademark of Chr. Hansen's Laboratory, Inc. for its rennet and other food products, and is registered in the United States and Canada.

"JUNKET" BRAND FOODS

Division of Chr. Hansen's Laboratory, Inc.

LITTLE FALLS, N. Y.

CORRECTIVE-REGULATIVE AGENT in CONSTIPATION

KONDREMUL

—an emulsion of Mineral Oil and Irish Moss—clinically effective, pleasant to take, soothing to the bowel.

A corrective regimen for all types of constipation associated with pregnancy, convalescence, senility, is presented in the three forms of Kondremul:

KONDREMUL Plain (containing 55% Mineral Oil)

KONDREMUL with non-bitter Extract of Cascara* (4.42 gms. per 100 cc.)

KONDREMUL with Phenolphthalein* —.13 gm. (2.2 gr.) phenolphthalein per tablespoonful.

***Caution: Use only as directed.**

ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION

Canadian Distributors:

CHARLES E. FROSST & CO.

Box 247, Montreal

THE E. L. PATCH COMPANY

BOSTON, MASS.

FACTS for doctors and dietitians on special diets in which the use of an enriched, easily prepared cereal of high nutritive value is indicated.

Is there an ideal cereal for the aged?

A NEW and increasingly important field of interest to physicians is Geriatrics —the study of diseases, processes and special problems of the aged and aging. As the study and knowledge of Geriatrics expand, particular attention is being given to the dietary requirements of the aged. Investigations into this specialized field now indicate that foods combining the advantages of high nutritive value and thorough digestibility are increasingly important in the regimen of many older people, including those in normal health as well as those suffering from certain digestive disorders and degenerative disabilities.

"Enriched 5 Minute" Cream of Wheat offers such advantages in the form of a bland, tempting cereal that older people find most enjoyable. This cereal contains a high and effective source of Iron, and contributes generously to the carbohydrate requirements of the body. In addition, it supplies whole wheat amounts of Vitamin B_1, plus useful quantities of Calcium and Phosphorus and Niacin Vitamin. One part "Enriched 5 Minute" Cream of Wheat combined with four parts whole milk also supplies an appreciable amount of protein comparable in quality to the proteins of meat.

"Enriched 5 Minute" Cream of Wheat cooks to thorough digestibility after only 5 minutes of boiling.

The unusual combination of high nutritive values and low crude fiber content (one part in 200) is another factor in favor of this cereal as a dietary staple for older persons.

NOTE. For free booklet on use of "Enriched 5 Minute" Cream of Wheat in infant feeding, diets for expectant mothers, diets for the aged and bland diets, plus free sample package of the cereal (4-6 servings), write: The Cream of Wheat Corporation, 717 Stinson Boulevard, Minneapolis 13, Minnesota.

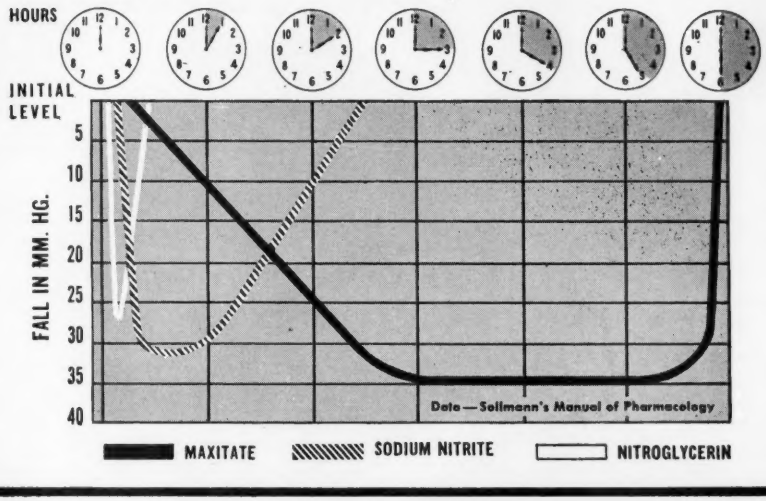
"Cream of Wheat" Trademark Reg. U. S. Pat. Off.

MAXITATE®

REG. U. S. PAT. OFF.

MANNITOL HEXANITRATE STRASENBURGH

Pioneered by STRASENBURGH *Research*



UNIFORMLY DEPENDABLE ACTION

PACKAGE DATA

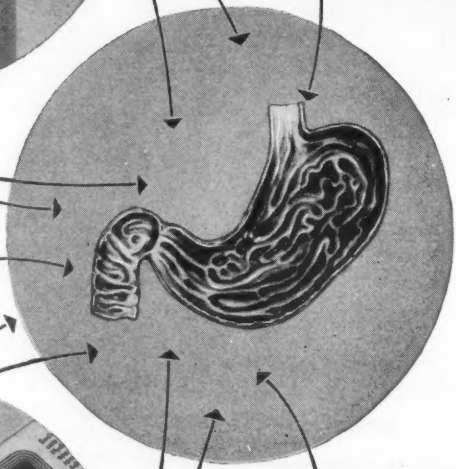
Available in bottles of 100 and 1000 tablets.

Maxitate ¼ gr. (white) Not Scored
Maxitate ½ gr. (white) Scored
Maxitate ½ gr. with Phenobarbital ¼ gr. (blue) Scored
Maxitate ½ gr. with Phenobarbital ½ gr. (pink) Scored
Maxitate ½ gr. with Nitroglycerin 1/100 gr. (violet) Scored

R. J. STRASENBURGH Co.

PHARMACEUTICAL CHEMISTS SINCE 1886

ROCHESTER 4, NEW YORK



WHAT PRICE RELIEF?

There is No toll exacted for relief when GELUSIL* Antacid Adsorbent is used in peptic ulcer.

Constipation typical of most alumina-gels is rarely a factor when 'GELUSIL' is the selected therapy. There is usually: *NO INTERRUPTION IN HEALING PROGRESS—NO DELAY IN RECOVERY.*

'GELUSIL' 'WARNER'

'GELUSIL' Antacid Adsorbent is supplied in bottles of 6 and 12 fluidounces.

'GELUSIL' Tablets are supplied for the ambulant ulcer patient; boxes of 50 and 100 tablets, wrapped individually in cellophane for convenience and portability.

WILLIAM R. WARNER & CO., INC.
113 West 18th Street • New York 11, N. Y.

*Trademark Reg. U. S. Pat. Off.

"Patients afflicted with chronic maladies...become increasingly undernourished as the disease progresses."[1]

"It cannot be over-emphasized that malnutrition exists coincident with a primary disease, that malnutrition is a serious complication and is amenable to therapy."[2]

"As these patients are in such great need of protein, a therapy of over-feeding is indicated."[2]

"The effect of protein hyperalimentation is truly remarkable in (many) conditions."[2]

"Nothing is as striking as to see these symptoms (mental depression, lack of appetite, weakness and lassitude) disappear in a few days of a regimen of 'hyperalimentation'."[2]

"The ideal high protein therapy in patients able to take food by mouth is the oral administration of a palatable, easily digested protein or protein derivative capable of being incorporated in large quantities in the common foods and of producing large positive nitrogen balances."[3]

Essenamine

SPECIALLY PROCESSED PROTEIN • DERIVED FROM LACTALBUMIN

For Oral Protein Therapy

Kozoll et al[3] who observed a percentile increase in nitrogen retention from 11 per cent on a low protein diet to 43 per cent on a high protein diet state that their "success with the employment of Essenamine as the principal ingredient of a high protein diet was probably due to four factors:

(1) "*its high concentration of proteins*;

(2) "*its high content of essential amino acids*, that is, its high biologic value;

(3) "*its lack of any pronounced taste*, so that it can be incorporated in large quantities in other foods that have a pleasant taste;

(4) "*its limited solubility*...(which) apparently minimized the concentration of amino acids in the small intestine at any one time, so that the sense of fulness was postponed and the tendency to diarrhea...did not occur."

Essenamine is supplied in 7½ and 14 oz. wide-mouth jars.

Frederick Stearns & Company

Division DETROIT 31, MICHIGAN

[1] Cannon: Some Pathologic Aspects of Undernutrition, Proc. Inst. Med. Chicago 13:20, 1944.
[2] Sprinz: Malnutrition, M. Clin. North America 30:363, 1946.
[3] Kozoll, Hoffman, Meyer and Garvin: High Protein Therapy, Arch. Surg. 53:683, 1946.

Trade Mark *Essenamine* Reg. U. S. Pat. Off.

Gerilac

...your patient's Assurance of well-rounded nutrition...

"A loss of the reserve store of nutrients is of the utmost importance to physicians whose patients are apt to be the very ones made vulnerable by loss of these reserves."[1] Such vulnerability may be readily counteracted by the routine use of GERILAC, with its abundance of valuable and easily digestible milk proteins... pre- and postoperatively, in convalescence, restricted diets, and pregnancy and lactation, as well as pediatric and geriatric cases. • GERILAC supplies a high protein and a low fat content, with moderate proportions of the milk carbohydrate lactose, and with ample fortification of all essential vitamins and minerals —so necessary for well-rounded nutrition. • It is highly palatable when reliquefied either cold or warm—pleasant and bland, with or without added flavors—only water required for dilution. It may also be used in cooking and baking.

GERILAC is a Dietary Supplement, containing spray-dried whole milk and skim milk, and fortified with vitamins A and D, B-Complex, C, together with niacinamide, mono-sodium phosphate and iron citrate. Available in 1-lb. tins at all pharmacies. Advertised only to the Medical Profession.

1. Youmans, J. B.: Virginia Med. Monthly, 72:238, June, 1945

Write for Professional Literature and "Tasty Recipes" Booklet

BORDEN'S PRESCRIPTION PRODUCTS DIVISION
350 MADISON AVE. • NEW YORK 17, N. Y.